Nova Scotia

ANNUAL REPORT

for the fiscal year
ending March 31, 1987

Department of Lands and Forests

89-05803/

REPORT OF THE
MINISTER OF LANDS AND FORESTS

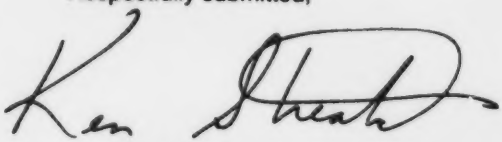
To His Honour

The Honourable Lloyd R. Crouse, P.C.
Lieutenant-Governor of Nova Scotia

May It Please Your Honour:

I have the honour to submit herewith the report of the Department of Lands and Forests for the fiscal year ended March 31, 1987.

Respectfully submitted,



Ken Streatch
MINISTER OF LANDS AND FORESTS

REPORT OF THE
DEPARTMENT OF LANDS AND FORESTS

The Honourable Ken Streatch
Minister of Lands and Forests
Halifax, Nova Scotia

Sir:

I have the honour of presenting the Report of the Department of Lands and Forests for the fiscal year ended March 31, 1987.

Respectfully submitted,

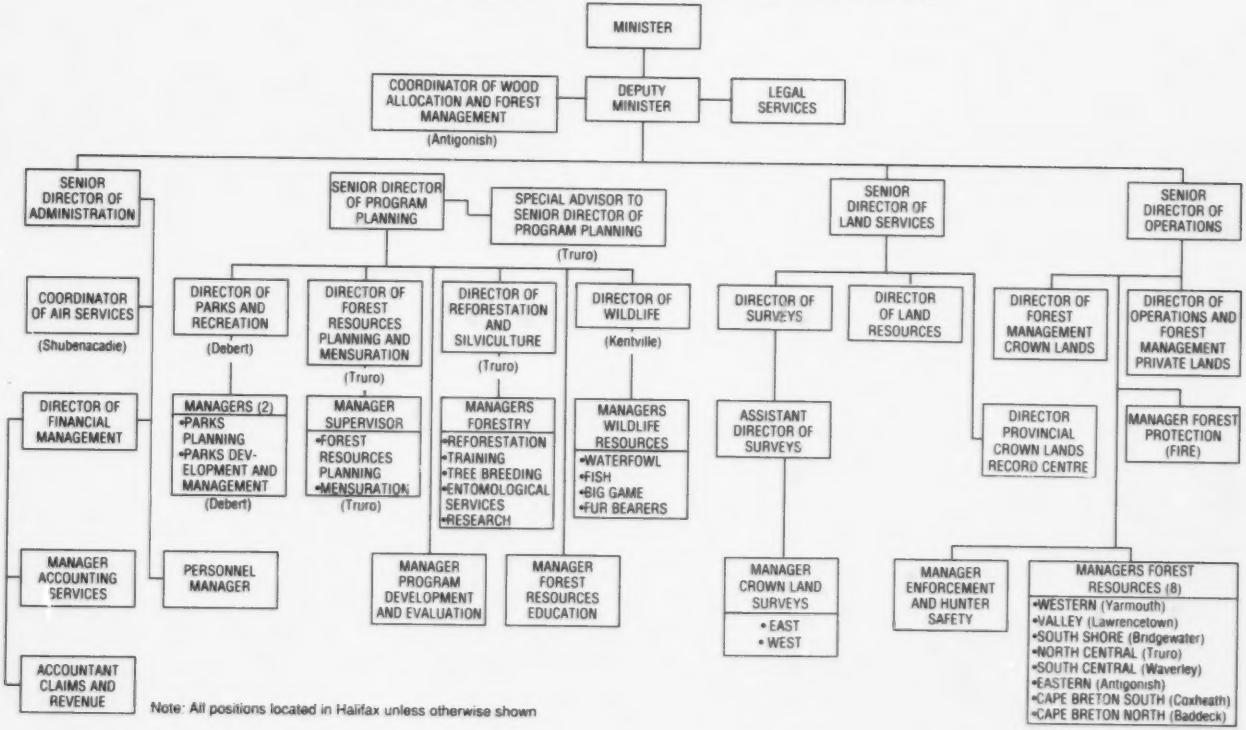
John Mullally
DEPUTY MINISTER

CONTENTS

DEPARTMENTAL FUNCTION AND ORGANIZATION 10
BOARDS, AND COMMISSIONS 10
Nova Scotia Pulpwood Marketing Board 10
Commissioner of Forest Enhancement 11
FOREST POLICY AND LEGISLATION 12
ACTS ADMINISTERED BY THE DEPARTMENT 12
ADMINISTRATION BRANCH 13
FINANCIAL MANAGEMENT 13
Expenditures and Revenues, 1986–87 13
PERSONNEL ADMINISTRATION 17
AIR SERVICE 18
WOOD SALVAGE/STORAGE AGREEMENT 18
PROGRAM PLANNING BRANCH 19
ADMINISTRATION 20
Federal/Provincial Forestry Agreements 20
Forest Resources Education 21
Forest Industry Development 22
Urban Forestry 22
Dutch Elm Disease Assistance 23
REFORESTATION AND SILVICULTURE 24
Nursery Operations 24
Tree Breeding 25
Entomological Services 27
Aerial Foliage Protection Program 28
Silviculture Training 28
Forest Research 30
FOREST RESOURCES PLANNING AND MENSURATION DIVISION 31
Forest Inventory 31
Forest Production 31
Land Evaluation 32
Scaling 32
Forest Management Planning 32
Timber Loan Board 33
WILDLIFE DIVISION 33
Non-Game 33
Big Game 35
Furbearers 36
Upland Game and Waterfowl 36
Inland Fisheries 37
Wildlife Areas 38

PARKS AND RECREATION DIVISION 39
Organization 39
The Park System 39
LAND SERVICES BRANCH 41
SURVEYS DIVISION 41
Administration 41
Crown Land Surveys 42
Mapping 43
LAND RESOURCES DIVISION 45
Land Administration 45
PROVINCIAL CROWN LANDS RECORD CENTRE 45
OPERATIONS BRANCH 46
OPERATIONS FIELD OFFICES 47
CROWN LAND FOREST MANAGEMENT 50
Crown Lands Under Wood Supply Agreements 50
Unleased Crown Lands 52
PRIVATE LAND FOREST MANAGEMENT 54
Individual Assistance 54
Group Forest Management 54
PROTECTION SERVICES 56
Forest Protection (Fire) 56
Hunter Safety Education 57
Law Enforcement 57
TABLES 58

Figure 1
Management Organization of the N.S. Department of Lands and Forests



Note: All positions located in Halifax unless otherwise shown

DEPARTMENT OF LANDS AND FORESTS
P.O. Box 698
Halifax, Nova Scotia
B3J 2T9

MINISTER
Hon. Ken Streatch
424-4037

DEPUTY MINISTER
John Mullally
424-4121

DEPARTMENTAL FUNCTION AND ORGANIZATION

The Department of Lands and Forests was established by legislation enacted in 1926. It is charged with administering the Lands and Forests Act and various other statutes, including the Beaches Preservation and Protection Act and the Provincial Parks Act.

From these Acts it derives authority to manage Crown lands, to provide a system of parks, and to protect the forests, wildlife, and beaches. Inherent in the legislation and incumbent upon the department are responsibilities pertaining to the productivity of the forests generally, the implementation of forest management programs, the supply of forest products, public education, and the enhancement of recreational and scenic values. The department also assists federal agencies in enforcing the Migratory Birds Convention Act.

The functions and activities of the department are carried out through four branches: Administration, Operations, Program Planning, and Land Services. This structure is shown in Figure 1. Unless otherwise indicated, functions are located in Halifax (P.O. Box 698, Halifax, Nova Scotia B3J 2T9). The department is well decentralized with staff and facilities located in all municipalities.

BOARDS AND COMMISSIONS

NOVA SCOTIA PULPWOOD MARKETING BOARD
Suite 210
Queen Square
45 Alderney Drive
Dartmouth, N.S.
(424-7598)

This board is responsible for administering the Pulpwood Marketing Act. The purpose is to regulate the marketing of pulpwood on behalf of producers and buyers in the province.

COMMISSIONER OF FOREST ENHANCEMENT
Box 1830
Truro, N.S.
B2N 5Z5
(893-7242)

The commissioner reports annually to the Governor-in-Council through the Minister on the implementation of forest management programs.

FOREST POLICY AND LEGISLATION

The Province's policy *Forestry: A New Policy for Nova Scotia* was implemented by three Acts passed by the Legislature. They are: The Forest Act, The Forest Enhancement Act, and The Primary Forest Products Marketing Board Act. Pursuant to The Forest Enhancement Act, a Commissioner of Forest Enhancement was established. Donald L. Eldridge was named to that office.

ACTS ADMINISTERED BY THE DEPARTMENT OF LANDS AND FORESTS

1. Beaches and Foreshores Act
2. Beaches Preservation and Protection Act
3. Blueberry Associations Act
4. Bowaters Mersey Agreement Act
5. Forest Enhancement Act
6. Forests Act
7. Halifax Power and Pulp Company Limited Agreement Act
8. Indian Lands Act
9. Kedgemakooge National Park Act
10. Land Holdings Disclosure Act
11. Land Titles Clarification Act
12. Lands and Forests Act
13. Nova Scotia Land Surveyors Act
14. Nova Scotia Pulp Limited Agreement Act
15. Parks Development Act
16. Provincial Parks Act
17. Primary Forest Products Marketing Board Act
18. Scalers Act
19. Scott Maritimes Pulp Limited Agreement Act
20. Surveys Act (not proclaimed)
21. Trails Act (not proclaimed)

ADMINISTRATION BRANCH

The Administration Branch is responsible for financial management, personnel administration and air services, as well as for implementing administrative policies and procedures on behalf of the minister and deputy minister. It is composed of three divisions: Financial Management, Personnel Administration, and Air Services.

FINANCIAL MANAGEMENT

The Financial Management Division develops financial systems and procedures and provides financial information to all branches of the department and control agencies of government. They assist in the preparation of the departmental expenditure estimates and prepare the revenue budget. They also manage and process departmental accounts payable, administer the collection of revenue and are responsible for the distribution and sale of game and fishing licenses.

Expenditures and Revenues
1986–87

ORDINARY EXPENDITURES

Administration Branch

Office of Minister and Deputy	$ 397,271	
Administrative Services	100,189	
Financial Management	762,660	
Game Licenses	290,138	
Personnel and Payroll	103,307	
Legal Services	78,863	
Air Services	2,212,815	
Grants and Assistance	213,200	
Forest Operators Assistance	875,000	
Office of Commissioner of Forest Enhancement	161,267	$5,194,710

Program Planning Branch

Administration		
Branch Administration	252,380	
Urban Forestry	26,148	
Forest Resources Education	341,302	

Reforestation and Silviculture		
Division Administration	214,429	
Forest Nurseries	1,756,038	
Silviculture Training	161,305	
Tree Breeding	402,166	
Insect and Pathogens Protection	1,541,241	
Forest Resource Planning & Mensuration		
Administration and Services	299,581	
Resource and Management Planning and Co-ordination	390,833	
Forest Inventory	724,320	
Timber Loan Board	32,949	
Scaling	39,664	
Wildlife		
Wildlife Management Planning	581,864	
Inland Fisheries	190,041	
Wildlife Parks	621,400	$7,575,661
Operations Branch		
Administration		
Administration	597,042	
Silviculture Agreements	323,516	
Field Services		
Administration	2,429,277	
Forest Protection	2,104,290	
Enforcement and Hunter Safety	643,075	
Parks Maintenance and Operations	1,172,258	
Extension and Training	70,913	
Private Land Forest Management	1,199,444	
Wildlife Management	484,776	
Crown Land Forest Management	1,651,998	
Properties, Vehicles, and Equipment	930,826	
Provincial Depot		
Administration	160,882	
Fire Control	682,057	
Mechanical Equipment	590,954	
Support Services	222,848	
Radio Communications	774,201	$14,038,357

Land Services Branch

Administration	$ 92,228	
Land Acquisition and Registry Division	476,219	
Surveys Division	1,046,909	
Provincial Crown Lands Record Centre	235,032	$1,850,388
TOTAL ORDINARY EXPENDITURES		$28,659,116
Forest Resource Development Agreement[1]		$3,324,571
Forest Renewal Agreement[1]		3,289,529
		$6,614,100

Ordinary Recovery Detail

Program Planning		
Forest Resources Education	$ 7,809	
Insect and Pathogens Protection	76,041	
Operations—Radio Comm.	76,793	$ 160,643

1. Funds budgeted in the Department of Development

CAPITAL EXPENDITURE

Furniture and Equipment		
Office	$ 23,962	
Firefighting Equipment	150,924	
Forestry Equipment	246,009	$ 420,895
Other		
Program Planning		
Parks and Recreation	$1,605,590	
Forest Research	459,173	
Operations		
Operational Silviculture	355,121	
Crown Land Access Roads	35,673	
Land Services		
Land Acquisition	648,366	
Surveys	1,362,111	$4,466,034

TOTAL CAPITAL EXPENDITURES	$ 4,886,929
Forest Resource Development Agreement[1]	$5,279,750
Forest Renewal Agreement[1]	9,238,769
TOTAL	$14,518,519

1. Funds budgeted in the Department of Development

REVENUE		
Admission Fees—Campgrounds	$ 241,018	
Fines and Forfeitures	102,458	
Game and Fishing Licenses	2,524,743	
Leases and Grants	50,446	
Nursery—Sale of Trees	974,586	
Selective Cutting	171,318	
Timber and Fuelwood Licenses	1,805,863	
Miscellaneous	134,094	$6,004,526

PERSONNEL ADMINISTRATION

The Personnel Administration Division is responsible for personnel and payroll documentation; recruitment and selection; staff training and development; casual employee rates of pay and administration; employee counselling and grievances; and other personnel matters.

The number of civil service positions decreased from 630 to 605 over the year as a result of the early retirement incentive program and the deletion of some position vacancies. During the year between 150 and 1200 casual employees were on staff, depending on the season, to assist in full-time programs of the department, to staff regular seasonal programs, and to participate in employment creation programs.

This year saw the retirement of H. Burton Robertson, Senior Director of Land Services and J. Ronald Chisholm, Assistant Director of Surveys, both at Halifax; Alexander J. Shaw, Maintenance Worker at Baddeck; Vera M. Hunt, Field Unit Accounting Clerk at Kentville; Donald C. Trueman, Supervisor of Forest Inventory at Truro, all under the regular retirement plan.

The following employees also retired during the year under the early retirement incentive plan: F.C. "Neil" van Nostrand, Manager of Wildlife Resources at Kentville; Robert E. Gates, Supervisor of Forest Resources at Yarmouth; Angus MacMillan, Coordinator of Wood Allocation and Forest Management, and G. David Dwyer, Forester, both at Halifax; Ronald B. Colpitts, Heavy Equipment Operator at Parrsboro; Gerald M. Davis, Supervisor of Forest Protection (Fire), Lewis K. Morton, Maintenance Worker, and Holmes C. Withrow, Technician Forest Resources all at Shubenacadie. Merle G. Jewers, Sanctuary Warden at Moser River; Gordon M. Minard, Supervisor of Forest Resources at Milton; Doris I. Murray, Field Unit Accounting Clerk at Belmont; D. Earl MacPherson, Mechanic at Coxheath; J. Arthur Smith, Supervisor of Forest Resources at Guysborough; Ralph K. Wheadon, Supervisor of Forest Resources at Waverley; Harry A. Wood, Maintenance Foreman at Stanley Management Unit; Stewart B. MacLeod, Technician Forest Resources at Baddeck; and Donald F. Brown, Supervisor of Forest Resources at Digby.

The Department was saddened by the death in May 1987 of Donald F. Brown, former Supervisor of Forest Resources in Digby, who had retired at the end of June 1986.

Air Service

An air service is operated and maintained by the department for forest fire detection and suppression, aerial support in emergency situations, resource development and management, and transport of government personnel. It also assists in policing game violations and other related work.

The fleet consists of four helicopters and three fixed wing aircraft. All helicopters and one fixed wing aircraft are equipped for water bombing.

During the year the department's helicopters and fixed-wing aircraft flew a total of 229.6 hours on fire patrol and water bombing missions. The Air Service was called on by Emergency Measures Organization (EMO) to carry out 57 searches for missing persons. Flying time for EMO amounted to 223.2 hours. The Air Service also carried out 22 air-ambulance missions.

Wood Salvage/Storage Agreement

During the fiscal year the department sold 36,585 cords (132 606 m^3 (stacked)) of budworm-killed softwood pulpwood, previously stored at roadside in the Cape Breton Highlands, to Stora Forest Industries Limited for use in its mill. As of March 31, 1987 there were 20,395 cords (73 922 m^3 (stacked)) still stored at roadside on the Highlands.

PROGRAM PLANNING BRANCH

The Program Planning Branch is responsible for developing, evaluating and recommending policy and program alternatives in forest management, wildlife management and parks and recreation. The branch is also responsible for the implementation of support programs, including forest nurseries, forest research, silviculture training, education and public information, wildlife parks, aerial insect-protection programs, entomological services, and forest industry development.

The branch comprises two subdivisions and four divisions:

- Forest Resources Education Subdivision, Truro
- Forest Industry Development Subdivision, Halifax
- Reforestation and Silviculture Division, Truro
- Forest Resources Planning and Mensuration Division, Truro
- Wildlife Division, Kentville
- Parks and Recreation Division, Debert

Direction in each case is provided by the Halifax Head Office.

Briefly, the Reforestation and Silviculture Division, P.O. Box 68, Truro, N.S. B2N 5B8 (895-1591), is responsible for planning and directing department programs to increase and improve forest yields within the province. This includes tree breeding, forest nurseries, silviculture training, forest research, entomology and aerial insect-protection programs. The Tree Breeding Centre (662-3300) is situated at Debert, and forest nurseries are in the following locations:

Provincial Forest Nursery
P.O. Box 130
Lawrencetown, Annapolis Co.
N.S. B0S 1M0
584-2234

Strathlorne Forest Nursery
P.O. Box 489
Inverness, N.S.
B0E 1N0
258-2626

Wittenburg Forest Nursery
P.O. Box 250
Stewiacke, Colchester Co., N.S.
B0N 2J0
639-2152

The Forest Resources Planning and Mensuration Division, P.O. Box 68, Truro, N.S. B2N 5B8 (895-1591), is charged with maintaining a continuing forestry inventory of all lands, land evaluation, scaling functions, and forest resources planning, which includes Crown land management planning, economic planning, and road engineering.

The Wildlife Division, P.O. Box 516, Kentville, N.S. B4N 3X3 (678-8921), is required to appraise and evaluate the status and population trends of wildlife and to recommend harvest programs. The division also operates wildlife parks at Shubenacadie (Colchester County), Upper Clements (Annapolis County), and Two Rivers (Cape Breton County), and a fish-rearing station at Kelly Lake (Halifax County).

The Parks and Recreation Division, RR#1, Belmont. N.S. B0M 1C0 (Debert) (662-3030), is responsible for conducting studies and creating plans for the orderly development of a provincial parks and trails system and construction program.

The Forest Resources Education Subdivision, P.O. Box 68, Truro, N.S. B2N 5B8 (895-1591), is responsible for a comprehensive education and technical information program for the general public and departmental staff.

The Forestry Industry Development Subdivision, 120 Exhibition Street, 3rd Floor, Kentville, N.S. B4N 4E5 (424-7708), identifies, investigates and analyzes development opportunities for wood-using industries within the province; advises on related support programs; and provides technical advisory service to the sawn-products sector.

ADMINISTRATION

FEDERAL/PROVINCIAL FORESTRY AGREEMENTS

As of March 31, 1987 two federal/provincial funding agreements were being implemented:

1) the Canada/Nova Scotia Forest Resource Development Agreement signed on Aug. 31, 1982 to provide a total of $53.4 million ($28.3 million by Canada; $25.1 million by Nova Scotia) to March 31, 1987 for forest renewal and related projects; and

2) the Canada/Nova Scotia Forest Renewal Agreement signed in June 27, 1984 and amended in 1986 to provide a total of $25.5 million ($17.0 million by Canada; $5.5 million by Nova Scotia) for additional forest renewal projects with particular emphasis on the requirements of eastern Nova Scotia. The expiry date was extended to September 30, 1987 to permit completion of projects and programs contained in the agreement.

During the year under review, the Canada/Nova Scotia Forest Resource Development Agreement was amended to extend the expiry date to March 31, 1989 and to provide an additional $38 million ($22 million from Canada; $16 million from Nova Scotia) for forest renewal and related projects.

FOREST RESOURCES EDUCATION

A staff of six provides a central education and information service to staff and the public. This service supports the extension/public information function performed by all staff.

Requests are answered by a personal letter or card. Two periodicals were produced and distributed: the quarterly magazine *N.S. Conservation* and the bimonthly newsletter *Forest Times*. The former had a mailing list for the winter '86 issue of 23,216 while the latter had a list of 10,500. The two periodicals had a combined estimated readership per issue of 99,000.

We answered 1,500 requests for literature, mailed several *Technical Notes*, published and distributed the annual *Forest Products Directory*, the *Trapper's Newsletter* (7,000 copies) and the department's Annual Report.

In cooperation with Bowater-Mersey Paper Company Ltd., we launched Ralph Johnson's book *Forests of Nova Scotia*. Two other publications were *Wildlife: A New Policy for Nova Scotia* and *Tree Improvement in Nova Scotia*. In all, some 200,000 pieces of literature were distributed.

An audio-visual library was maintained in Truro on forest resource topics to serve staff and the public. This year staff put on an estimated 650 showings to a total audience of 45,000. Two instructional videos on pelt preparation and a script for a student slidetape on native trees were produced.

The AV catalogue was revised, computerized and reprinted. The major advertising expenditure went into print and radio advertising for the spring/summer forest fire prevention campaign. A hunting courtesy campaign was aired in the fall.

The National Forest Awareness campaign was launched, as requested by the Canadian Council of Forest Ministers. Funded under the Forest Renewal Agreement, this campaign combined four different 30-second national television ads with four print ads in *Time*, *Macleans* and *L'Acutualité*.

Forest Industry Development

This year business for sawmills started to increase, and most mills had a fair-to-good year. No new large sawmills were started, but Cobequid Lumber restarted operations; Kingston Lumber, Kings County, built a new planing mill; William DesChamp, Shelburne County, is continuing work on a new sawmill; and a number of small band sawmills have been purchased in Nova Scotia.

Several companies carried out renovations. Bowater Mersey, Lunenburg County, installed a new edger; Lewis Lumber, Digby County, installed a twin band resaw and a chipper edger; F.W. Taylor, Halifax County, installed a tree-length slasher; and Mactara, Halifax County, installed a computerized tree-length slasher and a gang resaw.

Forintek Canada Corporation conducted productivity studies for C.E. Harrison & Sons Ltd., Cumberland County, and Bowater, Lunenburg County, in 1985–86. In 1986–87, Forintek did studies for E.M. Comeau & Sons (1977) Ltd., Digby County; Kingston Lumber, Kings County; Brookfield Lumber, Colchester County; and Caledonia Woodworkers, Queens County.

Two serious fires destroyed a sawmill at Wentworth Lumber, Colchester County, and a planermill at Riversdale Lumber, Colchester County.

Three Maritime Forest Ranger School staff were given a tour to familiarize them with the industry. These people are involved in sawmill computerization.

Urban Forestry

A forester has been assigned to interest representatives from the cities, towns and villages in intensive management of their urban forest and green vegetation. The technical advice is directed at generating tree inventories, advising on methods of tree pruning, establishment, removal and planting.

Literature, slide-tape sets and films are provided in this promotional program. Many municipalities also make use of federal/provincial job creation programs to implement more intensive tree care programs.

Dutch Elm Disease Assistance

The Dutch Elm Disease (D.E.D.) was introduced to North America via Ohio in 1930 on some elm logs imported from Europe. It was first detected in Nova Scotia at Liverpool in 1969. Since then it has spread and is now found in at least 13 counties.

The Department of Lands and Forests has attempted to control the spread of D.E.D. by implementing a sanitation assistance program. At the beginning of the infestation, when the areas are small, contractors remove all infected elm limbs and trees. Infected wood must be burned or buried.

The present program provides 50 per cent cost-sharing to municipalities to carry out sanitation work on the elm trees. Twenty-three municipalities participated in the program this year—a decrease of four from 1985–86. Grants totalled $26,147.98 in 1986–87.

REFORESTATION AND SILVICULTURE DIVISION

Nursery Operation

Nursery administration staff has the responsibility, in cooperation with the three nurseries, for allocating available planting stock equitably. Other responsibilities include consolidating nursery budgets; coordinating cone crop surveys and collections; initiating or monitoring research projects at all three nurseries; monitoring nursery operations, budgets and major purchases; and, providing advice and recommendations to staff members.

Tree distribution by nursery and user agency in 1986 was as follows:

Nursery	No. of Trees Shipped
Lawrencetown	2,413,345
Strathlorne	4,103,850
Wittenburg	4,328,190
Other (Purchased)	3,550,178
	14,395,563

User Agency	No. of Trees Planted
Crown-licensed	70,475
Large landowner	6,359,292
FRDA	7,396,421
Small private (non-FRDA)	547,725
Other	21,650
	14,395,563

Of the trees planted by large landowners, 2,508,637 were Highland spruce (white and black). Of the trees planted on Crown lands and FRDA woodlots, 76,775 were planted by Boy Scout organizations.

The production of Highland spruce for outplanting on the spruce budworm-ravaged Cape Breton Highlands is continuing. Vegetative propagation of black spruce is gradually being replaced by white spruce from seed.

In 1986, a poor cone crop was experienced throughout Nova Scotia and no cones were collected. A total of 267 kg (587 lb.) of black and red spruce seed was purchased.

Expansion and/or upgrading took place at all three nurseries in 1986. At Strathlorne, 10 new greenhouses were completed and put into operation. A 40 ft. by 200 ft. storage barn was constructed and a generator purchased for new greenhouses.

At Lawrencetown, the greenhouse pallet systems were replaced, structural repairs were carried out on office buildings, and a new area was developed for a transplant field.

At Wittenburg, the greenhouse pallet systems were upgraded.

Four staff members attended the Container Update Workshop in Fredericton, New Brunswick. One staff member attended the North Eastern Area Nurserymen's Workshop at the State College, Pennsylvania. Strathlorne hosted the 1986 Maritime Nursery Manager's Workshop which was attended by nine staff members.

Nursery tours were conducted at all three nurseries for technical groups and individuals, special interest groups, schoolchildren, youth groups and the general public. A number of short talks were presented.

Plantation tours were carried out with field personnel.

Various reports were prepared and circulated to interested parties, and enquiries from the public were responded to in person, by telephone or through correspondence.

TREE BREEDING

The Tree Breeding Section is responsible for coordinating the overall Tree Improvement Working Group (TIWG) program. The program objective is to supply reforestation projects with genetically improved and tested seed by the year 2000. Operational work is shared with three industrial members—Bowater Mersey Paper Company Limited, Stora Forest Industries Limited, and Scott Worldwide, Inc. Technical and scientific expertise is made available through the Maritimes Forest Research Centre of the Canadian Forestry Service.

Virtually all of the TIWG clonal seed orchards were expanded, with grafted material shipped from the Tree Breeding Centre in Debert. Additional orchard area at the Tree Breeding Centre was site prepared by stumping and leveling. A cover crop was established and the area made ready for the start of a new red spruce orchard in 1987.

The white pine orchard, established at the Centre in 1982, produced its first crop of 3.5 lb (1.6 kg) of improved seed; enough to replant about 60 acres (25 ha) with superior planting stock.

Although flower production was generally light, 70 controlled matings were completed among white spruce clones in the breeding population.

A total of nine experiments were outplanted, each at several field locations, with a combined area of 24 acres (9.6 ha). Included were a *Larix* species trial, a genetic gain evaluation of the Lawrencetown seed orchard, and genetic value tests of individual plus-trees using open-pollinated seed.

The relatively poor performance of local black spruce seed sources on the Highlands of Cape Breton may be due to higher-than-normal rates of inbreeding resulting from the narrow width and relative isolation of these scattered stands. A pilot stand outcrossing program carried out in 1985 yielded about 15,000 seeds for the production of donor plants for the rooted cutting program at Strathlorne. A small amount of seed from each cross was used to produce material for two field tests established on Highland sites in 1986, to compare their performance with that of other black spruce seed sources.

All orchard data were maintained on a computerized database developed in 1985. A similar database for field tests was implemented in 1986. These computerized methods have greatly assisted Centre staff to keep track of many thousands of individually mapped trees, and have increased the accuracy of the record system.

In addition to tree breeding responsibilities, the section is also charged with inventory and quality monitoring of tree seed in storage for department use. All new seedlots are tested for both physical quality and viability as are seedlots in long-term storage. A large backlog of germination tests resulting from a major equipment breakdown in 1985, was processed and routine testing was restored to a regular schedule.

Staff at the Tree Breeding Centre gave many tours to school children, tourists and general interest groups during the year. Lectures on tree improvement were presented as part of three courses at the Nova Scotia Agricultural College, and the Centre was a regular field trip destination for many academic and continuing education courses. The Centre also hosted a wide variety of scientific and administrative personnel from other provinces, the United States, Mexico, China, Sweden and other countries.

ENTOMOLOGICAL SERVICES

Pest Detection Officers

The department has 24 Pest Detection Officers who assist the Federal Forest Insect and Disease Survey with the general survey of forest insects and pathogens, experimental studies on insect phermones, and special surveys for spruce budworm, gypsy moth and hemlock looper.

Important Forest Insects

Spruce budworm defoliation is assessed annually through an aerial survey. The defoliation detected from the air in 1986 was restricted to Cumberland, Colchester, Pictou and Antigonish counties. The total area of defoliation was 1,065,023 acres (431,000 ha) and is given in detail in Table 19.

Major outbreaks of the spruce beetle continued to decline. The European larch canker remained confined to mainland Nova Scotia.

The seedling debarking weevil has caused considerable seedling mortality in eastern mainland Nova Scotia. It has become one of the major threats to the success of plantation establishment, and efforts are under way to minimize losses.

Gypsy moth population remained generally low, and only minor shifts in distribution occurred.

Whitemarked tussock moth populations have been increasing. Various levels of defoliation occurred in several areas in eastern Nova Scotia. An epidemic of whitemarked tussock moth virus is expected to end this infestation.

Hemlock looper caused defoliation in a limited area in Diligent River, Cumberland County. The department treated 336 acres (136 ha) with *Bacillus thuringiensis (Btk)*.

Balsam gall midge and balsam twig aphid (Christmas tree pests) were present at generally very low populations.

Deterioration of white birch along the Bay of Fundy, due to annually recurring early foliage browning since the late 1970s, continued in 1986. Symptom expression (brown leaves falling early) was much less pronounced than in previous years. The percentage of healthy trees on permanent plots decreased from 93 per cent to 14 per cent between 1982 and 1986.

Pinewood nematode surveys at 55 locations were conducted in 1985–86. The "mucronate" form was found in one location in Stanley Management Unit Hants County (dead black spruce) and in Devon—Halifax County (dead balsam fir).

Aerial Foliage Protection Program

The objective was to protect current foliage in treatment areas. A total of 138,762 acres (56 155 ha) were sprayed with the biocide *Bacillus thuringiensis kurstaki* (Btk). Of this area, 74 per cent was in Cumberland County, 13 per cent in Pictou County, 7 per cent in Antigonish County, and 6 per cent in Colchester County. About 78 per cent of the area was small farm woodlots, 12 per cent was Provincial Crown land, 10 per cent was large private holdings, and 0.5 per cent was Federal Crown land.

Twelve fixed-wing aircraft—six Grumman Ag-Cats, three Cessna Pawnees and three Ayers Thrush—were used. They were based at Parrsboro and Trenton airports.

Treatment with Btk reduced the survival of budworm larvae by 67 per cent for red spruce and 58 per cent for white spruce.

Cost of this year's program was $1.885 million, or $13.58 per acre ($33.57 per hectare). The increase in cost reflects the inclement weather in June, and higher costs for aircraft and biocide.

In general the current spruce budworm epidemic in Nova Scotia is in flux. Overall there is no significant change in the total area mapped for the infestation between 1985 and 1986.

Silviculture Training

Seven two-day workshops on cleaning forest stands were held throughout the province. Eighty-three foresters, technicians and silviculture contractors and workers took part.

Dr. Maxwell L. MacCormack Jr. presented four two-day classroom courses on vegetation management with herbicides. Approximately 90 forestry personnel from both the public and private sectors participated. These were a part of the Technology Transfer project of the federal/provincial Forest Renewal Agreement.

Fifteen Nova Scotia Agricultural College students successfully completed the Farm Woodlot Management course during the fall semester. The course is designed to acquaint students with the farm woodlot resource and how to better manage it.

Subdivision personnel coordinated two six-week Level II Forest Worker training programs at Masstown and Baddeck. Forty-nine silviculture workers successfully completed the courses. Instruction was provided by Commercial Safety College staff with assistance from the Silviculture Training Subdivision.

A series of talks, including a slide presentation on the gains from intensive silviculture, was given at four information sessions on the South Shore. An illustrated presentation on correct planting techniques was made during the Technical Session of the Lunenburg County Christmas Tree Producers Association in Bridgewater. A one-day classroom presentation on Merchantable Thinning was given as part of a Private Woodlot Technical Seminar in Fredericton.

A series of skills tests on chainsaw working techniques were introduced to forestry instructors at the Commercial Safety College, Community Colleges and pulp companies. Copies of the silviculture course binders (*Shelterwood, Harvesting, Merchantable Thinning, Planting and Cleaning*) were distributed to the new group ventures.

Subdivision personnel represented the department on the Provincial Forestry Training Coordinating Committee. A basic objective of this committee is to ensure the development of a qualified, competent forestry workforce. Subdivision staff also participated on the Nova Scotia Forest Products Association's Safety and Training Committee.

FOREST RESEARCH

Four experimental softwood plantations were established in various parts of the province. The objectives of these trials are: to test a system for protecting seedlings stored in the field prior to planting; to test the performance of Scots pine seedlings grown from seed collected in various European locations; and to test the performance of all species and stock types shipped from the provincial nurseries.

One hardwood plantation with 20 species was established to further test the effectiveness of the Sommerford Sheltertree System. In addition 590 plots in 19 previously established trials were remeasured. Data from these trials is used to develop and refine guidelines for improving plantation performance throughout the province.

To provide data needed for wood supply analysis, four new trials were established, two in natural hardwood stands, one in a natural softwood stand, and one in a softwood plantation. In addition 37 plots were remeasured. Previously established plots in a fertilized hardwood stand were remeasured as part of an ongoing research program to determine the effect of fertilizer applications on the growth of hardwood and softwood natural stands and plantations.

Control of competing vegetation in natural stands and plantations is essential to the success of the province's forest management program. As part of an ongoing research program to develop and refine guidelines for effective control at a reasonable cost, six new trials were established. In addition 1,600 permanent sample plots in previously established trials were remeasured.

Research designed to increase the quality and to reduce the cost of Christmas trees continued to emphasize development of optimal fertilizer and herbicide prescriptions. Two trials using growth regulators to increase the size and number of lateral buds on balsam fir and Scots pine were remeasured.

Improved drainage has been identified as an effective method to increase site productivity in Scandinavia and Quebec. Drainage trials were established at two locations in Nova Scotia. A Finnish plow was used at one site as a comparison to the ditched areas.

In a joint project with Stora Forest Industries Ltd., a specialized forest ditching machine built in Finland was used to construct ditches

at various locations throughout Nova Scotia. Permanent sample plots to monitor changes in the level of the water table and the growth response of the trees have been established in several of the locations.

A project jointly funded by the provincial and federal governments under the Forest Renewal Agreement was initiated to study the productivity of forest workers performing the following silviculture treatments: Cleaning; Merchantable Thinning; Shelterwood; Stand Conversion; and Remnant Removal. Results will be used to refine the silviculture treatment assistance rates.

FOREST RESOURCES PLANNING & MENSURATION DIVISION

Forest Inventory

The department continued its inventory of the province's forest resources by establishing field plots in Colchester County to quantify both wood and wildlife habitat values. Permanent sample plots throughout the province were remeasured on a scheduled five-year program to provide data on growth and mortality.

Aerial photographs in true color at a scale of 1:10 000 were taken of Queens and Lunenburg counties. An information report covering Cape Breton Island inventory was printed and distributed.

Forest Production

Total commercial forest production for the 1986 calendar year increased by 11 per cent from 1985. Softwood lumber increased by 10 per cent; hardwood lumber decreased by 2 per cent. Compared to 1985, increases were reported for softwood lumber, softwood boxwood, hardwood railroad ties, hardwood mine packs, softwood and hardwood shingles, whole tree chips, softwood and hardwood pulpwood, and softwood poles and pilings and pit props. Decreases were reported for hardwood lumber and boxwood, softwood railway ties, softwood mine packs, softwood and hardwood laths, softwood and hardwood residue chips, and hardwood poles and pilings and pit props.

Overall, reported sawn production increased by 11 per cent.

The number of firms reported as sawing lumber and/or boxwood was 350, down 10 from last year.

Pulpwood exported from Nova Scotia in 1986 increased by 105 per cent from the 1985 value of 10,520 cords (38 131 m^3 (stacked)) to 21,599 cords (78 169 m^3 (stacked)) in 1986.

Of the 124,761,185 cubic feet (3 532 840 m^3) of primary wood production, 30.1 per cent was acquired by sawmills and 69.9 per cent went to roundwood users. Of the 37,508,484 cubic feet (1 062 121 m^3) of primary production processed by sawmills, 6,245,899 cubic feet (176 864 m^3) went to pulp mills as sawmill residue chips. An undeterminable amount of sawmill chips goes for fuel each year.

LAND EVALUATION

There were 21 separate lots cruised and evaluated by this section for possible trade or purchase with a total area of 8,931 acres (3 614 ha).

Scaling

Check scales were carried out relating to crown timber licenses and timber agreements. Assistance was given to various districts, companies, and individuals in scaling projects and resolving problems and complaints.

Murdock Ferguson resigned from the Board of Examiners (Scaling) in February 1987. His knowledge of the industry and common-sense approach to problems proved him to be a valuable asset to the board. Robert Robart, Scaling Supervisor with Bowater Mersey was appointed to the vacant board position.

The Annual Timber Scaling School was held May 6–10 at the Agricultural College in Bible Hill and offered candidates the opportunity to obtain a sawlog scaling license, a pulpwood scaling license or a Primary Wood Products scaling license (which is a combination of the sawlog and pulpwood licenses). The school was attended by 21 candidates, and the pass rate was 90 per cent.

FOREST MANAGEMENT PLANNING

The Section continued studies related to acquisition of a Geographic Information System (GIS). Initial functional requirements of a system have been determined.

Work on the Managex data base for Digby, Yarmouth and Shelburne continued. This system facilitates the location of silviculture treatment-specific sites for forest management purposes.

Work continued on the creation of standard photo stereograms for training photo-interpretation staff.

Construction was completed on approximately 10.5 miles (17.2 km) of forest access roads during fiscal 1986. Approximately $22,000 was spent on the hydroseeding program, doing roadsides and various Provincial Parks.

The engineering group was also involved in parks development projects, including design and tendering of contracts, in hydrology studies for stream crossings, and in road location on private lands.

After completing a test area of the Tobeatic Management Unit and getting the specifications in book form, photo interpretation began in the spring of 1986 for the new GIS. The interpretation started with Cumberland County and will eventually encompass all land in the province.

TIMBER LOAN BOARD

Eight applications were received and entailed the locating, field examination and investigation of physical plants and businesses and presentation of reports to the board. These applications came from eight different firms for nine separate parcels of land covering approximately 2,725 acres (921 ha).

The board accepted eight applications and processed eight loans in this period.

WILDLIFE DIVISION

NON-GAME

The Non-Game Section of the Wildlife Division was established to serve the growing public interest in non-consumptive uses of wildlife and in habitat protection and conservation. The section provides the capability within the department for reviewing, evaluating, planning, and completing studies and reports on the status of wildlife species not normally or traditionally considered game species. This capability permits the selec-

tion of appropriate measures for the management of these species and their habitat.

Major non-game projects and activities in the past year have concentrated largely on those species such as hawks, eagles, owls and cormorants which are protected by provincial statutes. Among the many non-game projects completed or continued in 1986–87 were studies of the numbers, productivity, wintering areas and food habits of breeding bald eagles. Based on a relatively stable and productive population of approximately 125–150 breeding pairs of eagles, the province again agreed to donate eight nestling eagles to the United States in order to assist that country in re-establishing breeding bald eagle populations in northeastern states.

More than 600 bald eagles have been banded to determine survival and movements of marked birds.

Two peregrine falcon release sites were operated this past year, (one at Blomidon Provincial Park and the other at Five Islands Provincial Park), in cooperation with the Canadian Wildlife Service and the World Wildlife Fund. These sites were established as part of a wide-scale program to re-introduce these birds in the Maritimes.

Other projects undertaken or continued in 1986–87 included studies of the food habitats of great and double-crested cormorants (in relation to commercial and sports fish), which have been extended to collect additional information. Island seabird inventories and island ecological surveys were continued as was the cooperative program with the forest inventory section to measure wildlife habitat characteristics within a variety of forest types. Staff also assisted with piping plover surveys and the placement of interpretative signs on beaches.

Osprey use of substitute nest platforms placed next to power line poles was again monitored. Together with additional substitute sites elsewhere the platforms were also successful in maintaining local breeding populations of these birds.

Additional responsibilities of the Non-Game Section in 1986–87 included drafting of recommended guidelines for forest wildlife habitats on private lands, representation on the Committee on the Status of Endangered Wildlife in Canada and provincial administration of regulations regarding the Convention on International Trade in Endangered Species, and implementation of the Provincial Policies for the Conserva-

tion of Wildlife Habitats, which involved representation by non-game personnel on the Wildlife Habitats Advisory Committee.

Many requests for assistance in dealing with nuisance non-game animals were answered. Several minor pest animal complaints were investigated. General information on non-game animals was made available as requested by the public, and presentations on non-game species, their habitats, and wildlife-habitat planning were made to various public groups and committees.

BIG GAME

Deer

The 96,002 licensed big game hunters in the province took an estimated 57,950 deer during the 1986 big game season which ran from October 31 through December 6. From the big game report cards returned, the following kill (by county) was calculated:

Kings	2,144	Cumberland	5,679	Cape Breton	2,318
Annapolis	2,666	Colchester	6,200	Richmond	2,376
Digby	1,970	Pictou	3,825	Inverness	4,114
Yarmouth	2,028	Antigonish	1,565	Victoria	1,738
Shelburne	1,912	Guysborough	3,767	Unknown	406
Queens	2,608	Halifax	2,840		
Lunenburg	4,810	Hants	4,984		

Bear

During the year 1986 a calculated total of 754 black bears were killed. Big game hunters accounted for 296 bears, foot snare permit holders took 416 more, 34 were killed to control depradation, and eight were killed by cars. The provincial distribution (by county) was as follows:

Kings	16	Lunenburg	63	Halifax	54
Annapolis	94	Cumberland	73	Hants	9
Digby	165	Colchester	35	Cape Breton	0
Yarmouth	68	Pictou	11	Richmond	11
Shelburne	84	Antigonish	7	Inverness	0
Queens	48	Guysborough	6	Victoria	7
				Unknown	3

Moose

In 1986 a limited five-day hunt for 200 hunters randomly selected from applicants was held in Victoria and Inverness counties. A harvest of 185 moose was registered at the mandatory registration stations. Of the total, 137 were males and 48 were females. Only 14 calves and 51 yearlings were registered; thus 120 (or about 65 per cent) of the harvest were prime breeding animals.

The 185 successful hunters reported 2,190 hours of hunting for an average of 11.8 hours each. Estimated expenses averaged $411.37 per moose taken, for a total of $76,103.00.

FURBEARERS

The sale of resident furbearer licenses for the 1986–87 season totalled 3,758, a decrease of 591 (14 per cent) from the 1985–86 trapping and hunting season. Overall, fur prices were very strong this past year, with beaver experiencing an eight-year high, muskrat a six-year high, mink were the highest since at least 1971, or earlier, and the average value of fisher rose by 38 per cent over last year., Raccoon and skunk experienced a decrease in average price from last year (see Table 5).

The numbers of furbearers taken were generally higher than for the 1985–86 season. Otter, bobcat and fox were down slightly (<14 per cent) in numbers taken, while squirrel (70 per cent), skunk (35 per cent), and black bear (65 per cent) all experienced much higher declines. Harvest of all other species increased, with beaver totalling 4,552, and raccoon the highest since 1981. The total estimated value of raw pelts to the trappers of Nova Scotia exceeded one million dollars (see Table 5).

As of August, 1986, all first-time fur harvesters have to attend and successfully complete the mandatory Nova Scotia Wild Fur Harvesters Course. To date, four courses have been held and a total of 77 students have passed the course. The instructors are all directors from the Trappers Association of Nova Scotia. Department staff prepared the initial student manual with assistance from the instructors.

UPLAND GAME AND WATERFOWL

The sale of resident small game licenses rose from 30,186 in 1985 to 31,282 in 1986 an increase of 4 per cent. Snowshoe hare (rabbit) hunters increased by 24 per cent over last year, and waterfowl hunters increased

by an average of 57 per cent. The only species that had decreases in the number of hunters pursuing them were Hungarian partridge (11 per cent) and snipe (2 per cent).

The harvest level of rabbits was down by 14 per cent, the lowest in six years. The ruffed grouse harvest was also down (31 per cent) from last year, but like rabbits, their populations are cyclic and we have no reason to believe their population levels will not rebound again.

The reported 1986 provincial pheasant harvest increased 29 per cent compared with 1985. This was considerably helped by large increases in pheasant levels from Digby County (135 per cent), Colchester County (215 per cent), and Annapolis County (65 per cent). These harvest levels represent the second highest pheasant harvest on record in Nova Scotia (see Table 7).

The number of waterfowl hunters rose by 57 per cent over last year. Black ducks, other freshwater or inland ducks, and geese all experienced increased harvest levels compared with 1985. The sea duck harvest decreased by 34 per cent.

INLAND FISHERIES

Approximately 60,910 yearling brook trout, 8,950 yearling rainbow trout and 154 two-year-old trout were reared and distributed from the Kelly Lake Fish Culture Station in 1986 (see Table 8). Most of the brook trout were put into lakes which were readily accessible to the public. The rainbows wre part of a put, grow and take fishery.

In 1986, 38 lake surveys were updated or completed. The Nova Scotia Department of the Environment assisted in the analysis of water samples to determine current pH levels and future susceptibility. A year round pH time series was conducted on Dollar Lake as well as Shubenacadie (Grand) Lake and its tributaries.

A monitoring of baseline populations of wild salmonids was carried out by 51 sites in 1986 by electroseining. This brings our total number of sites examined to 432.

A cooperative habitat improvement project continues on Breac Brook, Cape Breton County. Some in-stream cover devices and bank stabilization work was done in 1986. Evaluations were continued at two other sites.

Creel census programs were carried out by means of angler diaries, enforcement staff and the license stub returns. Additionally, a rearing pond staff conducted a full creel census at Kelly Lake.

The calculated catch of brook trout by licensed anglers in 1986 was 1,074,895 or 16.2 trout per license.

WILDLIFE AREAS

Provincial Wildlife Parks

The Provincial Wildlife Park at Shubenacadie attracted an estimated 350,000 to 400,000 visitors, the majority being Nova Scotian residents. Visitors also came from every province of Canada, many U.S. states, the United Kingdom and other countries.

Both Upper Clements and Two Rivers wildlife parks together attracted more than 100,000 visitors. Facilities are being upgraded continually.

No additional animals or birds were obtained in the last year, but our pheasant and wood duck program continued with 678 pheasants being distributed to most counties of the province. Ducks Unlimited released 315 wood ducks from our Shubenacadie hatchery.

Wildlife Management Areas

The following areas were managed by the department:

	Predominant Species	County
Abercrombie	cormorants	Pictou
Antigonish Harbour	waterfowl	Antigonish
Debert	waterfowl	Colchester
Dewey Creek	waterfowl	Kings
Eastern Shore Island	seabirds	Guysborough
Kelly Lake	salmonids	Halifax
Minas Basin	Canada goose	Kings
Pearl Island	seabirds	Lunenburg
Scatarie Island	ptarmigan, Arctic hare	Cape Breton
Shubenacadie	various	Colchester
Tobeatic	beaver	(Digby, Yarmouth, Shelburne, Queens)

The department manages an outdoor education area at Manganese Mines in Colchester County.

Provincial Sanctuaries

Blandford—Lunenburg County
Chignecto—Cumberland County
Debert—Colchester County
Liscomb—Halifax and Guysborough Counties
Martinique Beach—Yarmouth County
Melbourne Lake—Yarmouth County
Spectacle Island—Victoria County
Sunnybrae—Pictou County
Two Rivers—Cape Breton County
Upper Clements—Annapolis County
Waverley—Halifax County

PARKS AND RECREATION DIVISION

Tourism relies on the availability of public parks which protect and provide access to resource land, and which contain high quality facilities for outdoor recreation and heritage appreciation. Provincial parks play an important role in maintaining the image of Nova Scotia as an attractive tourist destination which, in turn, improves opportunities for growth in the industry. As well, the parks system provides Nova Scotians with a valued experience.

Organization

The provincial parks system is administered by the Parks and Recreation Division in Debert, and by the Operations Branch from its eight subdivisions and 21 district offices throughout the province. The Parks and Recreation Division is responsible for planning the park system and individual parks, developing standards and preparing procedures for development and operation. The Operations Branch is responsible for maintenance, operation and policing of parks; and with guidance from Parks Division staff they undertake most capital construction. The capital budget is administered by the Parks Division which also manages major construction projects.

The Park System

In 1986, the park system comprised 19 campgrounds, 89 day-use parks

and five wildlife/historic parks. The total operational parkland equalled 18,483 acres (7480 ha) with an additional 30,381 acres (12 295 ha) in reserve.

Provincial parks opened May 16 and closed October 14. Camping fees were $7.00 per night and firewood $1.00 per bundle. Day-use parks were available at no charge. Total revenue for 1986 season was $241,016.

A summary of 1986–87 campground user statistics indicated approximately 115,000 persons stayed 39,331 party nights in the park systems' 1425 campsites. It is estimated that in excess of 1,500,000 people visited provincial parks during the park season. As well, indications are that a majority of the provincial parks are used during the off season for walking, hiking and winter activities.

Planning continued at Dollar Lake Provincial Park to facilitate construction of a large destination park and day-use area. The park will host the 1987 Nova Scotia Boy Scout Jamboree.

The department established the Sandy Bay Citizens Advisory Committee with whom it consulted in preparing a preliminary park management concept for a new park at Sandy Bay, Queens County.

To improve the division's resource inventory data for provincial parks and candidate parklands, vegetation inventories—which include data on geology, soils, vegetation, and their inter-relationships—were undertaken for: Pomquet Beach, Antigonish County; Blomidon, Kings County; and Dollar Lake and Taylor Head, Halifax County.

Brochures were completed for two parks—Moose River Gold Mines and Lewis Lake, both in Halifax County—and work on several others commenced. Interpretive signage was also prepared for Smiths Cove and Shore Road Look-off, Annapolis County.

The division continued to provide input into the department's forest management planning to ensure that recreational considerations are taken into account.

In conjunction with the joint federal/provincial Canadian Heritage Rivers Program, a detailed inventory of 45 rivers throughout Nova Scotia was completed. Seven rivers were recommended for further study.

Planning and development work was carried out on 15 sites. This work included: construction of boardwalks, landscaping and dune restoration at Dominion Beach, Cape Breton County; construction of campground, roads and campsites at Dollar Lake, Halifax County; and completion of parking area and construction of beach facility at Rainbow Haven and Lawrencetown Beach, Halifax County.

Three new parks were opened. Two are in Digby County—one near the ferry terminal and the other near the mouth of Bear River—and both have lookoffs over the Annapolis Basin. The third park is an historic day-use park at Moose River Gold Mines, the site of the 1937 mine disaster.

In recognition of the high standard of park facilities for the disabled at Lewis Lake Provincial Park, Halifax County, the department was awarded the Facility Excellence Award in 1986 by the Canadian Parks and Recreation Association. Additional facilities for the disabled were provided in several other provincial parks throughout Nova Scotia as well.

LAND SERVICES BRANCH

The Land Services Branch consists of the following: the Surveys Division, the Land Resources Division, and the Provincial Crown Lands Record Centre.

The Surveys Division surveys, monuments and maps the Crown lands administered by the department and maintains surveyed Crown land boundaries. In addition, it surveys land for purchase or expropriation; for environmental, recreational, or cultural purposes; and for other government departments or agencies. The division is also responsible for the investigation and settlement of claims to ungranted land.

The Land Resources Division is responsible for the acquisition and disposal of Crown lands administered by the department. It prepares all legal documentation related to temporary and permanent land transfers.

The Provincial Crown Lands Record Centre coordinates provincial landholdings information for all government departments and agencies including that for all Crown land records dating back to 1730.

SURVEYS DIVISION

ADMINISTRATION

In detail, 93 returns of survey were received from the field, and 225 survey plans were processed and filed. One hundred and twenty-seven plans and descriptions were prepared and approved pursuant to Section 30(1) of the Lands and Forests Act. These form part of a Certificate of Release issued by the Crown asserting no interest or claim to the corresponding parcel of ungranted land. In addition, plans were drafted for 46 leases, two grants, 29 legal surveys and 18 timber licenses. Documentation and mapping were prepared for the turnover of 21,102 acres (8 540 ha) of Crown land under the provision of the Nova Scotia Pulp Limited Agreement Act. Total area under license and turned over to the company to date is 1,372,398 acres (555 390 ha).

This section negotiated a contract with Atlantic Canada Airborne Sensing of Amherst, Nova Scotia for vertical color aerial photography for forest inventory purposes covering the Counties of Queens and Lunenburg.

The Surveys Division provided inspection of condominium plans on behalf of the Registrar of Condominiums. During the period, plans were inspected and field checks carried out on 29 condominium projects comprising 719 units.

CROWN LAND SURVEYS

The total area of Crown land surveyed during the year was 21,735 acres (8 796 ha). This required 182 miles (293 km) of boundary line and the placing of 706 survey monuments. To date, Crown land surveyed and monumented totals 3,500,417 acres (1 416 570 ha).

Distribution of Crown land surveyed during 1986–87:

County	Acres	Ha	County	Acres	Ha
Annapolis	200	81	Hants	140	57
Antigonish	311	126	Inverness	3,354	1 357
Cape Breton	4,350	1 760	Lunenburg	341	138
Colchester	10,211	4 132	Pictou	51	21
Cumberland	368	149	Queens	164	66
Digby	0	0	Richmond	297	120
Guysborough	711	288	Shelburne	0	0

Halifax	1,049	425	Victoria	0	0
			Yarmouth	188	76
			TOTAL	21,735	8 796

For various projects in addition to the regular Crown Survey Program, there were 391 acres (158 ha) surveyed, requiring 24 miles (39 km) of boundary and the placing of 283 survey monuments. These projects included boundary surveys for other government departments, leases, rights-of-way, conveyances, proposed purchases, expropriations, land trades, land title clarification, trespass surveys, beaches preservation and protection, surveys for releasing any title interest the Crown may have to ungranted land, surveys connected with investigations of boundary disputes or claims to Crown land, and detailed site surveys to facilitate architectural and engineering design work for the construction of schools, hospitals and other public structures.

During the period, 272 miles (438 km) of boundary line were renewed by Surveys Division staff.

MAPPING

The mapping section is composed of three groups: Photogrammetry, Cartography and Reproduction.

The Photogrammetry Section completed mapping in manuscript form for three sites in the province. The areas are: Sandy Bay Beach Provincial Park, Queens County, completed at 1:2500 scale; Point Michaud, Richmond County at 1:1200 scale; Caribou Provincial Park Extension, Pictou County at 1:480 scale.

The Cartography Section comprises the Orthophoto Unit, the Special Assignment Unit and the Crown Land Property Mapping Unit. The Orthophoto Unit continued developing a series of Forest Inventory map sheets on the 1:10 000 orthophoto resource base. During the period, plotting was completed on 61 sheets in the Western Subdivision. This gives a new project total of 1,390 map sheets plotted. During the year, 54 manuscripts and 46 scribecoats were updated in Cape Breton and Inverness counties. In addition, 36 new scribecoats were completed in western Nova Scotia. Eight final film positives were produced by this unit in conjunction with the photomechanical darkroom thus enabling whiteprints to be reproduced showing Crown land boundaries on the orthophoto base maps.

The Special Assignment Unit prepared 13 Biophysical Maps with land system symbols and produced 12 Land Ownership Maps covering the South Shore Subdivision. The Unit drafted a total of 20 plans showing land to be released under the Lands and Forests Act, and it compiled a large map of Nova Scotia for display purposes in the board room of the Dartmouth office. A number of smaller maps were produced at the request of staff working in other sectors of the department. Drafting corrections were made to several survey plans as support for the Plan Examination Unit.

The Crown Land Property Mapping Unit has the responsibility of identifying on provincial base maps, all lands under the administration and control of the Department of Lands and Forests. Approximately 780 revisions to the Crown land data base were carried out on the existing 1:15 840 scale map series. Research on ungranted lands in the counties of Kings and Lunenburg was carried out. The Crown land mass in the counties of Inverness, Richmond, Victoria, and Cape Breton was digitized. A complete set of maps for the Counties of Queens and Lunenburg was color annotated. All active Crown leases and letters of authority throughout the province were plotted on the property maps.

The reproduction group comprises the Darkroom, the Air Photo Library and the Provincial Map Library.

The Darkroom produces film positives, negatives and papers required by the cartographic group in the revision of existing plans and for the production of large-scale and orthophoto forest type mapping. In this fiscal year, 148 requests were received which required processing of 962 pieces of material. The darkroom was moved to Dartmouth and was updated with new equipment including a vacuum frame and film processor.

The Air Photo Library is stocked with some 200,000 aerial photographs which provide coverage of the entire province and date from 1927 to the present. The general public frequently visit the library but the photographs are provided as a viewing service only. Assistance is given in ordering prints from the National Air Photo Library in Ottawa or from the Maritime Resource Management Service in Amherst. This service is also extended to other government departments and agencies. Staff dealt with approximately 1,700 requests in 1986–87.

The Provincial Map Library is administered by the same staff as the Air Photo Library and has on file almost all the film positives of the

departmental map sheets, as well as reproducible orthophoto resource and large-scale urban map sheets provided by the Land Registration and Information Service (L.R.I.S.), Summerside, P.E.I. with approximately 21,000 map tracings now on file.

During the year, the unit received 60 topographic tracings at a scale of 1:1 000 which cover portions of the cities of Halifax and Dartmouth.

Originally, the Provincial Map Library was created to provide a reproduction service for departmental use only. Over the years, service has gradually expanded to meet the demands of the general public and other government agencies. Service demands during the past year (4,600 requests) resulted in approximately 39,100 map sheets being reproduced, of which 28,200 were for departmental use. Approximately 10,900 were sold to the general public and other government agencies, which generated revenue of $32,800 in the 1986/87 fiscal year.

LAND RESOURCES DIVISION

Land Administration

During the fiscal year we: transferred 21 parcels of Crown land to provincial departments and the federal government; issued four grants involving approximately 163.2 acres; issued 15 deeds involving approximately 9,533.87 acres; prepared 53 letters of authority for mineral exploration, construction purposes, inland water courses, and a variety of domestic purposes; designated one area under the Beaches Preservation and Protection Act; and proclaimed three areas under the Provincial Parks Act.

Nineteen Certificates of Title were issued under the Land Titles Clarification Act. These were issued in the communities of: Neils Harbour–New Haven in Victoria County (1); Little Lorraine in Cape Breton County (1); and New Road Settlement (8), East Preston (6), Oldham (2), and Cherry Brook (1), all in Halifax County.

Fifty-one tenders were called including 31 parcels for stumpage, 11 for special tenders, five for Christmas trees, two for pulpwood, one for sawlogs and one for house logs.

We issued 29 timber licenses for cutting Crown land stumpage, one peat log exploration license, and 59 leases involving approximately 185.25 acres of land. Twelve trespasses on Crown land were reported.

One area (West L'Ardoise in Richmond County) was designated a Fisherman's Reserve.

PROVINCIAL CROWN LANDS RECORD CENTRE

Pertinent information and documents relating to landholdings of 19 government departments and agencies were received by the centre. During the past year, records of transactions totalling 17,900 images have been microfilmed and the documents have been stored.

In cooperation with the Department of Transportation (D.O.T.), the centre completed a pilot project of plotting all D.O.T. properties in Annapolis County. This resulted in a much more accurate compilation of D.O.T. landholdings and is of benefit to both the government and the public. Research and plotting of the Wrights River diversion of 1939 at Antigonish and the subsequent sale of portions of the property acquired were completed.

Research and plotting of over 60 documents of the Nova Scotia Power Corporation lands acquired in the 1930s at Lake Vaughan, Butler Lake and East and South Quinan, Yarmouth County, were completed.

Approximately 2,500 requests from the public, provincial and federal government departments and Lands and Forests staff were processed.

The section recorded and posted the following documents: 43 land purchases; 39 disposal documents; 30 confirmed Crown papers; 134 Section 30(1) certificates; four grant documents; 71 lease documents; 28 rejected petitions; 15 certificates of title; and 143 survey plans.

Two hundred and seventy-six petition numbers were issued, 80 miscellaneous drafting assignments carried out, 30 lots were plotted on aerial photos for the Claims Section.

OPERATIONS BRANCH

The Operations Branch is responsible for implementing and maintaining the department's programs in forest fire control; protection of beaches, fish and wildlife; enforcement of fish and game regulations; management of Crown lands, including timber sales and forest improvement; administering programs of assistance to private woodland owners, including a management advisory service; constructing and operating provincial parks and other outdoor recreation areas; administering designated

game sanctuaries; providing field assistance in planning, data collection, and other services in Crown land administration and resource education; and the gathering of statistics on forest resource use.

The branch functions through its senior staff located in Halifax and Shubenacadie and through eight geographical subdivisions.

The Provincial Forest Fire Control Centre, P.O. Box 130, Shubenacadie, N.S. B0N 2H0 (758-2232) is responsible for the acquisition, distribution, and maintenance of fire control equipment, the motor vehicle fleet, and heavy equipment. The Fire Control Centre is also responsible for the operation and maintenance of the Integrated Mobile Radio System servicing user departments and agencies of government; hospitals, ambulances; fire departments; and the RCMP.

The province is divided into eight roughly equal geographical subdivisions, each staffed with a resource manager, a Crown lands forester, a private lands forester and, in most cases, a biologist. Within the subdivisions are districts headed by supervisors and staffed by forest technicians, field clerks, maintenance personnel, and forestry crews. This staff implements the Operations Branch programs.

OPERATIONS FIELD OFFICES

WESTERN
(Yarmouth, Digby and Shelburne counties)

10 Starr's Road
Yarmouth, N.S.
B5A 2T1
(742-7846)

P.O. Box 367
Digby, N.S.
B0V 1A0
(245-2164)

P.O. Box 369
Shelburne, N.S.
B0T 1W0
(875-2501)

Kemptville Depot
Kemptville, N.S.
B0W 1Y0
(761-2227)

SOUTH SHORE
(Queens and Lunenburg counties)

99 High Street
Provincial Building
Bridgewater, N.S.
B4V 1V8
(543-8167)

McGowan Lake Depot
Caledonia, N.S.
(242-2550)

P.O. Box 190
Milton, N.S.
B0T 1P0
(354-3462)

Chester Grant Depot
Chester, N.S.
(275-3574)

Wiles Lake Depot
Bridgewater, N.S.
(543-2394)

VALLEY
(Annapolis and Kings counties)

120 Exhibition Street
Provincial Building
Kentville, N.S.
B4N 4E5
(678-8907)

P.O. Box 130
Lawrencetown, N.S.
B0S 1M0
(584-2229)

SOUTH CENTRAL
(Halifax and Hants counties)

Box 23, Site 2
R.R.#1, Waverley, N.S.
B0N 2S0
(861-2560)

Middle Musquodoboit, N.S.
B0N 1X0
(384-2290)

Stanley Hangar
R.R.#1, Scotch Village, N.S.
B0N 2G0
(632-2410)

Lewis Lake Depot
R.R.#3, Armdale, N.S.
B3L 4J3
(876-2308)

Musquodoboit Harbour, N.S.
B0J 2L0
(889-2332)

P.O. Box 130
Shubenacadie, N.S.
(758-3437)

P.O. Box 190
Windsor, N.S.
B0N 2T0
(798-2016)

NORTH CENTRAL
(Cumberland and Colchester counties)

626 College Road
Bible Hill, N.S.
B2N 2R2
(895-6325)

P.O. Box 130
Oxford, N.S.
B0M 1P0
(447-2115)

P.O. Box 428
Parrsboro, N.S.
B0M 1S0
(254-3241)

EASTERN
(Pictou, Guysborough and Antigonish counties)

11 James Street
Provincial Building
Antigonish, N.S.
B2G 1R6
(863-4513)

P.O. Box 50
Guysborough, N.S.
B0H 1N0
(533-3503)

R.R.#2, Aspen
Guysborough Co., N.S.
B0H 1E0
(522-2024)

Pictou County District Office
P.O. Box 457, New Glasgow, N.S.
B2H 5E5
(752-3181)

Antigonish Depot
(863-1502)

MacLellan's Brook Depot
(752-5247)

North Riverside Depot
Guysborough, N.S.
(533-3333)

CAPE BRETON NORTH
(Inverness and Victoria counties)

P.O. Box 68
Baddeck, N.S.
B0E 2H0
(295-2554)

P.O. Box 130
Whycocomagh, N.S.
B0E 3M0
(756-2339)

CAPE BRETON SOUTH
(Richmond and Cape Breton counties)

Coxheath Depot
R.R.#6, Sydney, N.S.
B1P 6T2
(564-6389)

Provincial Building
St. Peter's, N.S.
B0E 3B0
(535-2032)

CROWN LAND FOREST MANAGEMENT

CROWN LANDS UNDER WOOD SUPPLY AGREEMENTS

Pulp and Paper Companies

Stora Forest Industries, Ltd., Port Hawkesbury

The 50-year license agreement (wood supply and forest improvement) with Stora Forest Industries, Ltd. covers 1,371,486 acres (555 033 ha) of Crown land in the seven eastern counties, with additional areas being added yearly until a total of 1,500,000 acres (607 042 ha) has been placed under company agreement. The agreement allows an average annual allowable harvest of 330,000 cords (1 196 105 m^3 (stacked)).

In the calendar year 1986, 220,875 cords (800 573 m^3 (stacked)) of softwood pulpwood, 16,264 cords (58 952 m^3 (stacked)) of hardwood pulpwood and 133,203 tons (120 840 tonnes) of whole-tree chips were delivered to the mill from Crown lands. Of the softwood pulpwood, 47,086 cords (170 666 m^3 (stacked)) were salvaged from insect-damaged material. Also 29,740 cords (107 795 m^3 (stacked)) of salvaged softwood pulpwood were delivered to the mill from storage (provincial stockpiled wood).

In addition 875,520 board feet (4 946 m^3) of softwood sawlogs, 858,690 board feet (4 851 m^3) of hardwood sawlogs, 9,078 cords (32 905 m^3 (stacked)) of hardwood pulpwood, 860 cords (3 120 m^3 (stacked)) of softwood pulpwood, 4,399 cords (15 946 m^3 (stacked)) of hardwood fuelwood, 10 cords (38 m^3 (stacked)) of lathwood and 930 lineal feet (283 m) of pilings were produced for sale elsewhere.

Under the Forest Resource Development Agreement and the Forest Renewal Agreement, funding was available for silviculture treatments on Crown lands. Under the company's license agreement, the Province returned to the company a stumpage rebate for assistance in forest improvement work. During 1986 the following treatments were carried out: 5,708 acres (2 310 ha) of site preparation, 9,916 acres (4 013 ha) of planting, 3,590 acres (1 453 ha) of spacing, 16,187 acres (6 551 ha) of weeding and 1,376 acres (557 ha) of remnant felling/salvage.

Stora submits all harvesting and forest improvement proposals (in the form of annual cutting plans and annual silviculture plans) to the department for prior approval. Department staff make field checks before

approvals are given. Field staff do a second check during operations on approved jobs.

Scott Maritimes Ltd., Abercrombie Point

This agreement gives the company the right to cut stumpage on 203,000 acres (82 153 ha) of Crown lands for 50 years commencing in 1966. It provides for the average annual production of 50,000 cords (181 228 m^3 (stacked)).

Under the Forest Renewal Agreement funding was available for silviculture treatments on Crown land. During the calendar year 1986, 3,888,202 board feet (22 019 m^3) of softwood sawlogs, 19,738 cords (71 542 m^3 (stacked)) of softwood pulpwood, and 10,612 cords (38 464 m^3 (stacked)) of hardwood pulpwood were produced.

Under an annual agreement this company received a stumpage rebate for the performance of silviculture on the licensed Crown land. During 1986 Scott Paper Company completed the following: 42 acres (17 ha) of site preparation, 173 acres (70 ha) of planting, 121 acres (49 ha) of cleaning and 215 acres (87 ha) of burning.

Scott submits all harvesting and forest improvement proposals (in the form of a five-year management plan) to the department for prior approval. The plan must follow the agreed-upon guidelines and, in general, show where operations are to take place, what products are to be extracted, and the proposed road construction. Department staff make field checks before approvals are given. Annual cutting plans and annual silviculture plans identify specific locations of various operations.

Canexcel Incorporated, East River

The 10-year stumpage and roundwood sale agreement with Canexcel signed in December, 1976 calls for the Crown to supply the company with 10,000 cords (36 246 m^3 (stacked)) of wood (75 per cent hardwood) on the company's request. Also, the company can extract 15,000 cords (54 368 m^3 (stacked)) annually from Crown lands in the counties of Hants, Halifax, Annapolis, Kings, Lunenburg, Queens, Shelburne, Yarmouth, and Digby, which are especially allocated by the Province via five-year management plans. This agreement requires the company to submit annual cutting plans for its licensed lands.

Canexcel purchased 162,880 board feet (920 m^3) of softwood sawlogs, 2,565 cords (9 297 m^3 (stacked)) of softwood pulpwood and 1,522 cords (5 519 m^3 (stacked)) of hardwood pulpwood from the Crown in 1986.

Lumber Companies

The Department has stumpage agreements with several lumber companies granting the right to cut specific volumes of wood on designated Crown lands for given periods of time. For details, see Table 21.

UNLEASED CROWN LANDS

Most of the unleased Crown lands are situated in the central and western parts of the province. The larger units or blocks have been placed under management plans drawn up in consultation with the Forest Planning Branch.

Access Roads

A total of 12.6 miles (20.3 km) of forest access roads was constructed during the year. The constructions consisted of 7.8 miles (12.6 km) of C-class and 4.8 miles (7.7 km) of D-class type roads. There were also hydrology studies completed on 9 stream crossing sites, resulting in the design of 6 bridges.

Approximately 100 acres (40 ha) of roadside grass seeding were completed on 50 miles (80 km) of road right-of-way after road construction. An additional 25 acres (10 ha) of seeding were completed on mining sites, gravel pits, rifle ranges, dump sites and small areas for Parks and Recreation.

Stand Improvement

The following treatments were carried out on unleased Crown lands: site preparation on 652 acres (264 ha); weeding on 1,897 acres (768 ha); regeneration cut on 86 acres (35 ha); thinning on 128 acres (52 ha); clearing on 763 acres (309 ha); brush burning on 308 acres (125 ha); remnant felling on 64 acres (26 ha); and stand conversion on 22 acres (9 ha).

Forest Product Sales

Letters of authority and standing permits were issued to the many citizens requesting fuelwood.

During the calendar year 9,616 cords (34 857 m^3 (stacked)) of fuelwood was considered cut from unleased Crown lands. An additional 6,791 cords (24 614 m^3 (stacked)) were cut from licensed Crown lands leased to the forest industries in cooperation with the provincial government.

Timber Licenses

Thirty-one timber licenses granting short-term cutting rights on parcels of Crown land ready to be harvested were issued to succesful tenderers following advertisement.

Sales by Tender (Roadside)

Material produced on Crown land as a result of contracts or work by department crews is usually advertised for sale by tender. The successful bidder is then granted a letter of authority to remove the material.

During the fiscal year 1986, nine parcels of sawlog pulpwood, fuelwood and studwood, etc., were sold by letter of authority to the highest bidder.

General Letters of Authority

Authorization was given by letter of authority for the cutting and removal of forest products, aggregate material from beaches and inland deposits, quarried rock and Christmas wreath material, and for other uses of Crown land on a short-term basis, as well as for construction of access roads. A total of 1,168 such letters was newly authorized during the fiscal year.

NOVA SCOTIA FOREST PRODUCTS ASSOCIATION— ACCESS ROAD PROGRAM

This program administered by the Nova Scotia Forest Products Association was initiated in 1967. It provides assistance to forest operators to build access roads for harvesting forest products, to carry out forest improvement work and to improve access for fire fighting.

In 1986 511 applications were received and 441 applicants received assistance and completed their work under the program.

A total of 165 miles (264 km) of new forest access roads were built requiring 69,853 cubic yards (53 406 m^3) of gravel and 12 new bridges. An additional 135 miles (216 km) were upgraded using 14,990 cubic yards (11 460 m^3) of gravel. Assistance totalled $805,000 on completed applications.

PRIVATE LAND FOREST MANAGEMENT

INDIVIDUAL ASSISTANCE

Two federal/provincial agreements—the Forest Resource Development Agreement (FRDA) and the Forest Renewal Agreement (FRA)—were being implemented in the fiscal year (see Administration, page 20).

Forestry consultants and Departmental staff prepared 509 woodlot management plans, bringing the total to 3,909 plans representing 659,327 acres (266 934 ha) under management. These totals include neither the Group Ventures nor former Individual plans transferred to Group Ventures.

For individual management plan assistance details, see Appendix, Tables 13, and 14.

GROUP FOREST MANAGEMENT

The objective of the Group Venture Forest Management Program is to increase the harvest by encouraging the combining of small woodlots into larger operating areas, providing more efficient management and marketing. A new group venture—Celtic Isle Forestry Limited—began operations in the year, and Baddeck Valley Wood Producers Co-op Ltd. and Conform Ltd. expanded their service areas.

As of March 31, 1987 the 17 Groups in the program had a total of 1,513 shareholders with 214,326 acres (86 733 ha) of forest under management. The total value of the Groups' activities in 1986–87 was $8,235,000, up from $5,500,000 in the previous year. This includes income from the Province (operating payments), from the federal government (forest improvement claims) and wood sales of approximately $3,036,800 (see Table 15).

Operating and Administration

The Groups were paid $1,255,601 for operating, of which $743,041 and $512,560 were claimed under FRDA and FRA respectively. Each Group, under the direction of a Board of Directors elected by shareholders, is responsible for cruising, preparing or revising management plans, coordinating these plans into an annual operating plan, implementing the operating plan on the ground, and selling forest products from forest improvement activities and commercial harvesting. The shareholders pay a management fee of 5% on all wood sales (roadside price) which is credited to the Group's operating costs. In 1986–87 this fee totalled $151,842, up from $103,680 in 1985–86. This year 44,985 acres (18 205 ha) of forest land were brought under Group Management.

Forest Improvement Activities

The Groups claimed $3,942,532 from the Canadian Forestry Service under FRDA for the following work: the construction of 160.1 miles (258 km) of road, 30 bridges and 53 fire ponds; the completion of 171.5 miles (276 km) of boundary line work; and the completion of 10,822.5 acres (4 380 ha) of silvicultural treatments.

PROTECTION SERVICES

FOREST PROTECTION (FIRE)

General Fire Situation

The 1986 fire season was normal with respect to the fire load and losses experienced. A total of 506 fires burned 2,011 acres (816 ha). The 401 fires in April and May accounted for 79 per cent of all fires. In particular, mid-May was a critical time as we handled multiple fire starts across the province. The situation warranted a proclamation on May 16 prohibiting the setting of fires in the woods. The fire load and weather improved and the proclamation was lifted on June 10. After that initial outburst the province experienced a moderate fire load as persistent cloudy and wet weather followed.

Aircraft

The aircraft used in forest fire management were one Cessna Sky Wagon, one Beaver (on floats), three Hughes 500D helicopters, and one Bell 212 helicopter. All four helicopters were equipped with Bambi buckets, outfitted with the Instant Deployment System. During May a helicopter from the Nova Scotia Power Corporation and one from Newfoundland were used to supplement the departmental aircraft.

The Helitack crew based in Shubenacadie was used on eight fires.

Equipment Development and Training

A VCR package was purchased for the Training Section to assist in presentations. Through the federal/provincial Forest Renewal Agreement, the department bought a training equipment trailer and training aids for the Waverley Fire Fighters School. This enabled the school to provide an extensive training program to the rural volunteer firefighting departments.

The departmental firefighting training program was used to fulfill many requests for local training. In addition the Nova Scotia Training Officer instructed 40 trainees from the P.E.I. Department of Energy and Forestry in the Basic Fire Course.

Fire Prevention

Fire prevention activities included newspaper ads, television and radio spots, both by Lands and Forests and the forest industry. The fire prevention message was presented through use of "Smokey Bear" material and talks by the fire control training officer to groups of young people.

Prescribed Burning

The prescribed burning program consists of root raking and burning brush in windrows or piles. This is an acceptable site preparation method and is used mainly in late summer and the fall when overall hazard and risk are lower.

HUNTER SAFETY EDUCATION

Thirty-eight additional instructors were trained in Hunter Safety Education. Some 248 courses were conducted in the province (see Table 18).

LAW ENFORCEMENT

About 110 Operations full-time employees were involved in enforcing the laws the department administers. These laws include: the Lands and Forests Act, Parts I and III; the Forests Act; the Forest Enhancement Act; the Parks Act, the Angling Act; the Beaches Preservation and Protection Act; the Snow Vehicles Act; the Migratory Birds Convention Act; and the regulations pursuant to these acts.

A new Forests Act replaced Part II of the Lands and Forests Act, while the Forest Enhancement Act replaced the Forest Improvement Act.

For statistics on prosecutions, warnings and related matters, see Table 22.

TABLE 1
TIMBER PRODUCTS IN NOVA SCOTIA
(Calendar Years 1985 and 1986)

Product	Unit	1985	1986	Increase	Decrease
Lumber, Softwood	Mfbm	176,652	98,680	77,972	–
Lumber, Hardwood	Mfbm	7,376	7,221	–	155
Pulpwood	m^3 (stacked)	3,570,135	4,186,110	615,975	–
Pulp Chips, Residue	m^3 (stacked)	315,002	176,864	–	138,138
Railway Ties	Mfbm	1,260	2,275	1,015	–
Mine Packs	Mfbm	4,427	2,951	–	1,476
Pit Props & Poles & Piling	m^3 (stacked)	2,089	8,532	6,443	–
Laths	x 10^3 pieces	8,103	5,892	–	2,211
Shingles	Squares	491	752	261	–
Staves & Headings	Mfbm	56	97	41	–
Boxwood	Mfbm	1,765	1,952	187	–

TABLE 2
PROVINCIAL CROWN LAND FOREST PRODUCTION, Calendar Year 1986 (Common Units of Measure)

	SAWLOGS		PULPWOOD				FUELWOOD				OTHER PRODUCTS**				WHOLE-TREE CHIPS	
	Swd.	Hwd.	Softwood		Hardwood		Softwood		Hardwood		Softwood		Hardwood			
County	mfbm	mfbm	cords	m³S*	cords	m³S*	cords	m³S*	cords	m³S*	cords	m³	cords	m³	cords	tonnes
Pictou	239	21	47,195	(171 060)	7,737	(28 043)	0	(0)	1,482	(5,372)	0	(0)	0	(0)	276	(1 953)
Antigonish	17	11	20,809	(75 423)	1,732	(6 277)	0	(0)	740	(2 681)	0	(0)	0	(0)	1,400	(9 910)
Guysborough	638	40	6,785	(24 591)	3,951	(14 319)	0	(0)	1,973	(7 152)	5	(12)	0	(0)	483	(3 420)
Colchester	938	0	3,653	(13,242)	236	(856)	0	(0)	1,400	(5 073)	17	(38)	0	(0)	0	(0)
Cumberland	328	0	1,441	(5 224)	166	(603)	0	(0)	2,344	(8 495)	137	(310)	0	(0)	0	(0)
Hants	1	0	0	(0)	0	(0)	0	(0)	181	(656)	287	(651)	0	(0)	0	(0)
Halifax	4,509	0	50,634	(183 527)	20,508	(74 333)	267	(968)	3,347	(12 132)	0	(0)	0	(0)	0	(0)
Annapolis	982	10	1,094	(3 967)	360	(1 305)	0	(0)	379	(1 373)	0	(0)	0	(0)	0	(0)
Kings	163	0	2,597	(9 415)	1,547	(5 608)	42	(152)	118	(428)	0	(0)	0	(0)	0	(0)
Queens	1,241	15	2,140	(7 745)	231	(836)	0	(0)	417	(1 510)	27	(62)	0	(0)	0	(0)
Lunenburg	52	0	208	(754)	38	(138)	0	(0)	631	(2 287)	0	(0)	0	(0)	0	(0)
Digby	440	9	435	(1 578)	0	(0)	4	(14)	311	(1 126)	0	(0)	0	(0)	0	(0)
Yarmouth	63	40	404	(1 466)	58	(210)	0	(0)	807	(2 925)	0	(0)	0	(0)	0	(0)
Shelburne	497	0	6	(18)	0	(0)	0	(0)	99	(359)	0	(0)	0	(0)	0	(0)
Inverness	0	773	31,430	(113 920)	10,612	(38 466)	0	(0)	537	(1 947)	0	(0)	0	(0)	7,226	(51 154)
Victoria	0	0	24,255	(87 914)	958	(3 471)	0	(0)	566	(2 052)	0	(0)	0	(0)	0	(0)
Cape Breton	0	10	588	(2 131)	253	(916)	31	(114)	1,046	(3 790)	0	(0)	0	(0)	473	(3 349)
Richmond	0	0	703	(1 693)	0	(0)	4	(9)	61	(148)	0	(0)	0	(0)	0	(0)
TOTAL	10,108	929	194,377	(703 668)	48 387	(175 381)	348	(1 257)	16,439	(59 506)	473	(1 073)	0	(0)	9,858	(69 786)

* m³ (stacked) based on 8-foot (2.44-m) bolts

** Products not elsewhere specified converted to m³ solid wood

*** Whole-tree chips are all species and all diameters

TABLE 3
PROVINCIAL CROWN LAND FOREST PRODUCTION, CALENDAR YEAR 1986
(Cubic Feet and Cubic Metres of Solid Wood)

	SAWLOGS				PULPWOOD			
County	Softwood Cu. ft.	Softwood m^3	Hardwood Cu. ft.	Hardwood m^3	Softwood Cu. ft.	Softwood m^3	Hardwood Cu. ft.	Hardwood m^3
Pictou	47,781	(1 353)	4,167	(118)	3,775,600	(106 913)	618,961	(17 527)
Antigonish	3,390	(96)	2,189	(62)	1,644,670	(47 139)	138,539	(3 923)
Guysborough	127,592	(3 613)	7,981	(226)	542,752	(15 369)	316,031	(8 949)
Colchester	187,592	(5 312)	0	(0)	292,265	(8 276)	18,893	(535)
Cumberland	65,615	(1 858)	0	(0)	115,302	(3 265)	13,314	(377)
Hants	212	(6)	0	(0)	0	(0)	0	(0)
Halifax	901,796	(25 536)	0	(0)	4,050,737	(114 704)	1,640,650	(46 458)
Annapolis	196,385	(5 561)	2,012	(57)	87 545	(2 479)	28,817	(816)
Kings	32,595	(923)	0	(0)	207,792	(5 884)	123,778	(3 505)
Queens	248,192	(7 028)	3,001	(85)	171,206	(4 848)	18,434	(522)
Lunenburg	10,382	(294)	0	(0)	16,633	(471)	3,037	(86)
Digby	88,004	(2 492)	1,801	(51)	34,820	(986)	0	(0)
Yarmouth	12,607	(357)	7,981	(226)	32,348	(916)	4,626	(131)
Shelburne	99,411	(2 815)	0	(0)	389	(11)	0	(0)
Inverness	0	(0)	154,608	(4 378)	2,514,407	(71 200)	849,001	(24 041)
Victoria	0	(0)	0	(0)	1,940,402	(54 946)	76,598	(2 169)
Cape Breton	0	(0)	2,012	(57)	47,004	(1 331)	20,200	(572)
Richmond	0	(0)	0	(0)	37,363	(1,058)	0	(0)
TOTAL	2,021,554	(57 244)	185,752	(5 260)	15,511,235	(439 796)	3,870,879	(109 611)

TABLE 3 (Continued)
PROVINCIAL CROWN LAND FOREST PRODUCTION, CALENDAR YEAR 1986
(Cubic Feet and Cubic Metres Solid Wood)

	FUELWOOD				OTHER PRODUCTS				TOTAL			
County	Softwood Cu. ft.	Softwood m³	Hardwood Cu. ft.	Hardwood m³	Softwood Cu. ft.	Softwood m³	Hardwood Cu. ft.	Hardwood m³	Softwood Cu. ft.	Softwood m³	Hardwood Cu. ft.	Hardwood m³
Pictou	0	(0)	118,587	(3 358)	0	(0)	0	(0)	3,823,381	(108 266)	741,715	(21 003)
Antigonish	0	(0)	59,187	(1 676)	0	(0)	0	(0)	1,668,060	(47 235)	199,915	(5 661)
Guysborough	0	(0)	157,857	(4 470)	423	(12)	0	(0)	670,767	(18 994)	481,869	(13 645)
Colchester	0	(0)	111,983	(3 171)	1,341	(38)	0	(0)	481,198	(13 626)	130,876	(3 706)
Cumberland	0	(0)	187,486	(5 309)	10,947	(310)	0	(0)	191,864	(5 433)	200,800	(5 686)
Hants	0	(0)	14,479	(410)	22,989	(651)	0	(0)	23,201	(657)	14,479	(410)
Halifax	21,365	(605)	267,756	(7 582)	0	(0)	0	(0)	4,973,898	(140 845)	1,908,406	(54 040)
Annapolis	0	(0)	30,300	(858)	0	(0)	0	(0)	283,930	(8 040)	61,129	(1 731)
Kings	3,355	(95)	9,429	(267)	0	(0)	0	(0)	243,742	(6 902)	133,207	(3 772)
Queens	0	(0)	33,337	(944)	2,189	(62)	0	(0)	421,587	(11 938)	54,772	(1 551)
Lunenburg	0	(0)	50,464	(1 429)	0	(0)	0	(0)	27,015	(765)	53,501	(1 515)
Digby	318	(9)	24,861	(704)	0	(0)	0	(0)	123,142	(3 487)	26,662	(755)
Yarmouth	0	(0)	65,555	(1 828)	0	(0)	0	(0)	44,955	(1 273)	77,162	(2 185)
Shelburne	0	(0)	7,910	(224)	0	(0)	0	(0)	99,800	(2 826)	7,910	(224)
Inverness	0	(0)	42,978	(1 217)	0	(0)	0	(0)	2,514,407	(71 200)	1,046,587	(29 636)
Victoria	0	(0)	45,309	(1 283)	0	(0)	0	(0)	1,940,402	(54 946)	121,907	(3 452)
Cape Breton	2,507	(71)	83,660	(2 369)	0	(0)	0	(0)	49,511	(1 402)	105,872	(2 998)
Richmond	212	(6)	3,284	(93)	0	(0)	0	(0)	37,575	(1 064)	3,284	(93)
TOTAL	27,757	(786)	1,314,422	(37 192)	37,889	(1 073)	0	(0)	17,618,435	(498 899)	5,370,053	(152,063)

Conversion Factors: 1 mfbm = 200 cubic feet = 5.663 m³ solid wood equivalent
1 cord, 8-foot bolts = 3.624 56 m³ (stacked) = 2.208 72 m³ solid wood
1 m³ (stacked) x 0.609 375 = 1 m³ solid wood
1 m³ = 35.3147 cubic feet

TABLE 4
FISH AND GAME LICENSE SALES BY COUNTY, 1986–87

County	Resident Big Game	Non-resident Big Game	Resident Second Deer	Non-resident Second Deer	Resident Small Game	Non-resident Small Game	Resident Senior Citizen	Special Bowhunting Stamp
Annapolis	2,575	129	67	—	811	21	491	3
Antigonish	1,894	71	362	2	617	2	237	3
Colchester	5,301	259	1,414	31	1,689	33	778	12
Cumberland	5,525	348	1,380	26	1,772	20	888	7
Digby	2,941	52	123	—	1,215	11	512	6
Guysborough	2,039	81	765	7	881	9	340	9
Halifax	19,570	164	3,125	19	7,532	37	1,691	61
Hants	4,533	43	1,089	1	1,264	3	566	7
Kings	4,376	31	416	215	1,558	11	580	8
Lunenburg	6,099	44	270	2	1,887	1	874	10
Pictou	5,631	160	1,348	5	1,642	5	678	12
Queens	2,139	101	22	—	883	13	337	6
Shelburne	3,435	52	63	—	1,650	3	451	5
Yarmouth	3,903	65	87	6	1,716	17	619	8
Cape Breton	8,880	76	1,925	7	3,642	3	817	29
Inverness	2,740	223	850	36	1,292	8	274	—
Richmond	1,544	48	552	9	752	—	289	9
Victoria	872	29	251	9	479	2	104	4
TOTAL SALES	83,997	1,976	14,109	375	31,282	199	10,526	199

TABLE 4 (Continued)
FISH AND GAME LICENSE SALES BY COUNTY, 1986–87

County	Resident Fishing	Non-resident Fishing	Resident Salmon Fishing	Replacement Salmon Fishing	Reduced Resident Salmon Fishing	Non-resident Salmon	Fur Bearer
Annapolis	1,979	43	67	0	1	5	211
Antigonish	1,521	49	108	0	5	15	142
Chester	4,440	115	343	2	22	86	276
Cumberland	3,457	148	162	0	8	35	436
Digby	1,293	28	15	1	0	2	173
Guysborough	1,630	167	312	1	28	92	213
Halifax	17,291	253	1,727	7	93	76	383
Hants	3,228	22	159	1	9	13	221
Kings	3,991	18	132	0	9	2	264
Lunenburg	4,335	68	667	2	52	29	210
Pictou	5,675	86	220	0	20	33	322
Queens	1,264	110	332	4	19	89	158
Shelburne	866	29	21	0	0	0	135
Yarmouth	1,545	76	132	1	4	9	236
Cape Breton	8,635	99	663	3	27	13	131
Inverness	2,642	468	329	0	29	331	80
Richmond	871	29	85	1	11	15	96
Victoria	651	59	63	0	7	13	71
TOTAL SALES	65,314	1,867	5,537	23	344	858	3,758

TABLE 5
NOVA SCOTIA WILD FUR EXPORTS, VALUE TO TRAPPER, 1984–85, 1985–86 & 1986–87

	1984–85			1985–86			1986–87		
Species	Number Exported	Average Price	Total Value	Number Exported	Average Price	Total Value	Number Exported	Average Price	Total Value
Beaver	3,281	$31.40	$103,023	4,086	$ 35.82	$146,361	4,552	$ 44.32	$201,745
Muskrat	43,466	4.15	180,384	36,934	3.92	144,781	37,127	5.18	192,318
Otter	543	56.98	30,940	519	46.93	24,357	477	51.76	24,690
Mink	3,404	24.11	82,070	2,789	25.59	71,371	3,166	41.62	131,769
Lynx	6	429.62	2,578	8	472.81	3,782	1	329.85	330
Bobcat	1,091	149.03	162,592	1,135	118.80	134,838	1,030	187.24	192,857
Fox	2,435	52.82	128,617	2,626	35.90	94,273	2,259	41.29	93,274
Raccoon	7,797	20.60	160,618	8,231	22.35	183,963	10,254	18.33	187,956
Weasel	1,105	1.33	1,470	889	1.35	1,200	975	1.56	1,521
Squirrel	9,661	.43	4,154	5,377	0.42	2,258	1,618	0.63	1,019
Skunk	12	1.46	18	17	2.57	44	6	1.49	9
Fisher	31	116.05	3,598	37	126.49	4,680	36	174.90	6,296
Black Bear	83	37.93	3,148	82	24.74	2,029	29	37.44	1,086
Coyote	130	34.14	4,438	230	33.30	7,659	243	34.38	8,354
TOTALS			$867,648			$821,596			$1,043,224

TABLE 6
SMALL GAME HARVEST TRENDS 1978–79 TO 1985–86
NUMBER OF SMALL GAME HUNTERS

	1978–1979	1979–1980	1980–1981	1981–1982	1982–1983	1983–1984	1984–1985	1985–1986	1986–1987
Rabbits	31,343	28,376	23,928	26,061	28,463	27,959	30,531	24,394	30,259
Grouse	26,683	23,526	21,701	21,529	22,328	22,237	23,513	27,211	27,490
Wild Pheasants	6,908	5,745	5,742	5,430	5,028	6,593	6,876	7,540	7,832
Preserve Pheasants	515	625	612	517	632	591	155	459	465
Total Pheasants	7,166	6,370	6,354	5,947	5,660	7,184	8,031	7,999	8,297
Hungarian Partridge	675	860	883	702	878	722	722*	651	582
Woodcock	2,846	2,267	2,107	1,515	1,829	1,806	2,289	1,646	1,861
Snipe	2,300	1,915	1,767	1,256	1,126	1,739	2,018	1,301	1,279
Total Upland Game	34,538	31,690	28,801	29,843	29,781	29,618	36,278	35,057	35,051
Black Ducks	12,206	10,111	10,027	9,863	10,486	11,654	13,493	7,318	11,178
Sea Ducks	4,908	5,001	4,358	4,352	4,435	4,789	5,625	3,789	4,573
Other Ducks	7,665	7,176	6,153	5,895	6,722	8,041	8,596	4,152	7,339
Geese	6,440	5,164	5,036	4,631	4,338	5,871	5,834	3,633	5,702
Total Waterfowl	14,656	11,904	11,961	11,516	11,965	12,873	14,739	8,097	12,702

TABLE 7
SMALL GAME HARVEST TRENDS 1978–79 TO 1985–86

	1978–1979	1979–1980	1980–1981	1981–1982	1982–1983	1983–1984	1984–1985	1985–1986	1986–1987
Rabbits	641,370	532,184	323,336	379,862	547,566	508,124	421,388	449,426	384,560
Grouse	96,980	77,378	76,274	65,514	83,331	85,935	97,427	132,421	90,766
Wild Pheasants	8,938	11,490	13,278	10,822	10,126	14,171	16,335	12,668	16,323
Preserve Pheasants	2,172	2,188	2,446	1,773	3,973	1,805	1,048	1,378	4,885
Total Pheasants	11,110	13,678	15,724	12,595	14,099	15,976	17,383	14,046	21,208
Hungarian Partridge	1,174	1,641	2,004	1,071	1,548	1,083	1,083*	1,340	1,590
Woodcock	10,158	5,823	5,537	3,360	3,094	2,952	4,035	6,736	8,026
Snipe	4,740	3,478	6,351	3,316	2,673	3,773	5,199	4,286	3,373
Total Upland Game	765,532	634,182	429,226	464,618	652,311	617,843	546,515	608,255	509,523
Black Ducks	57,905	41,694	60,454	41,711	47,327	71,911	75,753	46,089	51,768
Sea Ducks	21,712	27,941	28,533	20,608	33,314	57,456	34,388	48,840	32,291
Other Ducks	37,600	26,256	34,732	18,403	34,506	52,763	64,502	35,449	38,783
Geese	8,710	10,002	8,524	3,693	5,051	9,712	12,554	5,761	12,237
Total Waterfowl	125,927	105,893	132,243	84,415	120,198	191,842	187,197	136,139	134,979

*Due to changing "Huns" to "Hungarian Partridge" on the survey card hunters reported killing 35,269 whereas previously under "Huns" it was about 1,500 each year. Therefore, "ruffed grouse" figures may be a low estimate and the figure used for huns was assumed to be about the same as last year.

TABLE 8
KELLY LAKE FISH CULTURE STATION STOCKING LIST, 1986

Rainbow Trout	
Halifax County	
Albro Lake	1,500
Kelly Lake	3,523
Maynard Lake	750
Oathill Lake	750
Round Lake	2,500
Total	9,023
Brook Trout	
Cape Breton County	
Browns Lake	1,000
Gammell Lake	1,000
No. 20 Dam	2,000
Colchester County	
Debert Pond	3,000
Shorrts Lake	3,000
Halifax County	
Albro Lake	3,000
Bear Lake	650
Bridge End Lake	500
Cooks Lake	1,000
Copper Lake	2,000
Lake Echo	6,000
First Lake	5,000
Kelly Lake	4,066
Kindevator Lake	450
Maynard Lake	3,000
Mill Lake	250
Oathill Lake	750
Otter Lake	3,000
Partridge Lake	500
Penhorn Lake	3,000
Round Lake	2,250
Second Lake	5,000
Stevens Pond	815
Stillwater Lake	1,000

Hants County	
Meadow Pond	3,000
Valley Lake	2,010
Inverness County	
MacIntyre Lake	1,500
Kings County	
Silver Lake	3,000
Total	61,741

TABLE 9

LANDS RECONVEYED TO THE CROWN, BY ACREAGE, 1986–87
(32 reconveyances)

County	Acres	Ha
Annapolis	32	13
Antigonish	0	0
Cape Breton	431	174
Colchester	160	65
Cumberland	158	64
Digby	53	21
Guysborough	0	0
Halifax	432	175
Hants	145	59
Inverness	100	40
Kings	137	55
Lunenburg	0	0
Pictou	70	28
Queens	0	0
Richmond	409	166
Shelburne	2	1
Victoria	6,222	2,518
Yarmouth		
TOTAL	8,351	3,379

TABLE 10

LANDS RECONVEYED TO THE CROWN, BY PURPOSE, 1986–87

Purpose	Acres	Ha
Timber Reserve	1,003	406
Recreation & Park Reserve	579	234
Right of Way	3	1
Building	1	1
Environment	100	40
Highway	32	13
Hydro Electric	6,222	2,518
Nursery	214	87
Ducks Unlimited	197	79
TOTAL	8,351	3,379
Expropriation	2	1
Transfer of Administration & Control	104	42

TABLE 11

LOCATION OF CROWN LAND
(as of March 31, 1987)

County	Acres	Ha
Annapolis	110,053	44 536
Antigonish	48,651	19 688
Cape Breton	123,858	50 123
Colchester	126,441	51 168
Cumberland	151,988	61 507
Digby	184,439	74 639
Guysborough	498,961	201 920
Halifax	455,173	184 199
Hants	93,319	37 764
Inverness	303,768	122 929
Kings	78,725	31 858
Lunenburg	91,605	37 070
Pictou	105,692	42 771
Queens	137,889	55 801
Richmond	98,159	39 723
Shelburne	259,154	104 874
Victoria	343,517	139 014
Yarmouth	269,737	109 159
TOTAL	3,481,129	1 408 743

TABLE 12
FOREST MANAGEMENT PLANS FOR SMALL INDIVIDUAL WOODLOTS, BY SUBDIVISION, 1986–87

Subdivision	Applications On File	Completed and Signed*	Completed & Signed Acres	Ha
Cape Breton North	62	76	12,202	4 940
Cape Breton South	283	90	16,976	6 873
Eastern	217	120	16,935	6 856
North Central	67	75	14,482	5 863
South Central	40	37	6,812	2 758
Valley	17	40	5,306	2 148
South Shore	8	45	6,620	2 680
Western	10	26	6,299	2 550
TOTAL	704	509	85,632	34 668

*Many former individual plan holders have transferred to Group Ventures.

TABLE 13
FOREST MANAGEMENT ACTIVITIES ON PRIVATE LAND (INDIVIDUALS), 1986–87
(Forest Resource Development Agreement)

Category	50–5,000 Acres Unit	50–5,000 Acres Assistance*	Over 5,000 Acres Unit	Over 5,000 Acres Assistance*	Pulp and Paper Companies Unit	Pulp and Paper Companies Assistance*	Total Unit	Total Assistance*
Management Plans	509 (464 FRDA)	$ 609,055		$ 430		N/A	475	$ 609,485
Access Roads—(built & under construction)	123 miles (198 km) (this includes Reconstruction 5)	401,834 (8 060)		N/A		N/A	123 miles (198 km)	401,834
Bridges	267 feet (81 m)	30,399		N/A		N/A	267 feet (81 m)	30,399
Boundaries—(established & renewed)	286 miles (461 km)	145,874		N/A		N/A	286 miles (461 km)	145,874
Fire Ponds	70	15,710		N/A		N/A	70	15,710
Silviculture	1,398 acres (566 ha)	95,045	2,613 acres (1 058 ha)	355,873	(11 283 ha)	27,868 acres $966,202	31,879 acres (12 907 ha)	1,417,120
Total	–	$1,297,917	–	$356,303	–	$966,202	–	$2,620,422

*Assistance paid by Canada as recommended by the Province. Group Ventures not included.

TABLE 14
FOREST MANAGEMENT ACTIVITIES ON PRIVATE LAND (INDIVIDUALS), 1986–87
(Forest Renewal Agreement)

PROGRAM 1.1

Category	50–5,000 Units		Over 5,000 Units		Pulp and Paper Companies		Total	
	Unit	Assistance	Unit	Assistance	Unit	Assistance	Unit	Assistance
Management Plans				$ 525				$ 525
Access Roads— Built & under construction	1 mile (2 km)	$ 4,100		N/A		N/A	1 mile (2 km)	4,100
Trails Built & under construction	28 miles (45 km)	21,100		N/A		N/A	28 miles (45 km)	21,100
Bridges	49 feet (15 m)	8,300		N/A		N/A	49 feet (15 m)	8,300
Boundaries	15 miles (24 km)	5,300		N/A		N/A	15 miles (24 km)	5,300
Silviculture	20,849 acres (8 441 ha)	3,235,500	1,881 acres (762 ha)	278,872	3,604 acres (1 459 ha)	$216,263	26,334 acres (10 662 ha)	3,730,635
Subtotal	—	$3,274,300	—	$279,397	—	$216,263	—	$3,769,960

TABLE 14 (CONTINUED)
FOREST MANAGEMENT ACTIVITIES ON PRIVATE LAND (INDIVIDUALS), 1986–87

CAPE BRETON INITIATIVE

Category	50–5,000 Acres Unit	50–5,000 Acres Assistance	Over 5,000 Acres Unit	Over 5,000 Acres Assistance	Pulp and Paper Companies Unit	Pulp and Paper Companies Assistance	Total Unit	Total Assistance
Access Roads — Built & under construction	11 (18.0 km)	56,500		N/A		N/A	11 (18 km)	56,500
Trails Built & under construction	7 miles (11 km)	5,400		N/A		N/A	7 miles (11 km)	5,400
Bridges	233 feet (71 m)	37,000		N/A		N/A	233 feet (71 m)	37,000
Boundaries	9 miles (15 km)	3,300		N/A		N/A	9 miles (15 km)	3,300
Silviculture	15,084 acres (6 107 ha)	2,651,000		N/A	1,356 acres (549 ha)	152,700	16,440 acres (6 656 ha)	2,803,700
Subtotal	–	$2,753,200	–	–	–	$152,700	–	$2,905,900
TOTAL	–	$6,027,500	–	$279,397	–	$368,963	–	$6,675,860

TABLE 15
GROUP FOREST MANAGEMENT ON PRIVATE LAND, 1986–87

Group Venture	Operating Claimed	Share-holders	Mgmt. Plans	Area Under Mgmt. Acres	Area Under Mgmt. Ha	Road Construction Miles	Road Construction Km	Ponds	Boundaries Miles	Boundaries Km	Silviculture Acres	Silviculture Ha	Forest Improvement Claimed	Volume of Wood Sold Cords	Volume of Wood Sold m³ S	Mgmt. Fee Contribution to Operating
West Pictou	$ 74,730	139	162	17,384	7 035	12.3	19 8	7	4.1	6 6	668 6	270 6	$ 206.280	6.961	25 232	$ 16.189
North Nova	79,950	120	114	27,434	11 102	5.9	9.5	2	16.6	26.7	1,031 9	417 6	258.436	9.000	32 600	8.214
Baddeck	79,984	165	160	21,440	8 676	16.2	26.1	1	2.5	4 0	648 4	262 4	340.397	3.469	13 229	7.809
LaForet	71,844	116	137	7,532	3 048	2.8	4.5	–	6.3	10 1	273 9	110 8	92.934	2.795	10 118	6.496
North Mountain	72,525	89	96	9,171	3 711	3.0	4.8	5	4.7	7 6	700.7	283 6	193.194	2.233	8 094	5.336
Sissiboo	80,509	103	130	16,115	6 522	8.2	13.2	4	16.0	25 8	313.3	126 8	190.367	2.670	9 666	6.120
Conform	58,829	126	149	25,800	10 440	13.1	21.1	1	4.5	7.2	857 1	346 9	369.356	11.523	41 765	21.384
Athol	76,941	83	89	21,350	8 640	14.4	23.2	1	27.7	44.6	1,418 6	574 1	345.094	8.422	30 525	20.009
Denysdale	79,087	51	56	8,659	3 504	6.3	10.1	3	2.1	3.4	193 7	78 4	114.715	497	1 800	2.935
Route 223	68,642	70	57	6,819	2 760	10.2	16.4	–	4.5	7.2	375 4	151 9	236.952	2.973	10 778	6.290
*Subtotal	$ 743,041	1,062	1,150	161,704	65 438	92.4	148.7	24	89.0	143 2	6,481 6	2 623 1	$2.347.725	50.543	183 807	$100.782
Coastal	71,919	68	50	4,945	2 001	9.5	15.3	4	23.0	37.0	386 3	156 3	178.880	5.012	1 844	10.819
Lunenburg	74,281	73	79	8,331	3 371	4.8	7.7	10	14.0	22.5	289 9	117 3	236.930	2.250	8 155	5.000
East Guysborough	72,589	37	42	6,287	2 544	9.3	15.0	4	12.7	20 4	692 6	280 3	241.849	3.046	11 040	7.521
Forchu	78,000	64	62	8,635	3 494	5.8	9.3	5	12.1	19 5	549 4	222 3	238.870	2.746	9 954	5.844
North Colchester	75,672	83	79	10,051	4 068	13.3	21.4	5	11.7	18.8	852 8	345 1	228.160	4.586	16 623	16.063
North Inverness	80,120	98	94	11,188	4 528	23.7	38.2	–	5.3	8.5	1,259 9	509 9	398.835	2.498	9 056	4.919
**Subtotal	$ 452,581	423	406	49,437	20 006	66.4	106.9	28	78.8	126.9	4,039 9	1 631.2	$1.523.524	20.138	56 672	$ 50 166
***Celtic Isle	59,979	28	18	3,185	1 289	1.3	2.1	1	3.7	6.0	301 0	121.8	71.283	413	1 497	894
Total	$1,255.601	1,513	1,574	214,326	86 733	160.1	257.7	53	171.5	276.1	10,822 5	4 376.1	$3 942.532	71,094	241 976	$151 842

*F.R.D.A.
**F.R.A.
***C.B.I.

TABLE 16
CLASSIFICATION OF FIRES BY CAUSE AND EXTENT, 1986

Cause	No. of Fires	Percentage of Total Fires	Area Acres	Area Ha	Percentage Total Area
Smoking	86	16.9	196.7	79.6	9.6
Camp Fire	10	2.0	6.8	2.8	0.3
Incendiary	144	28.2	809.0	327.4	39.3
Chimney	1	0.2	0.1	0.1	0.0
Explosives	0	0.0	0.0	0.0	0.0
Power Saw	3	0.6	130.1	52.6	6.3
Slash (Permit)	22	4.3	28.6	11.5	1.4
Slash (No Permit)	18	3.5	29.2	11.8	1.4
Land Clearing	17	3.3	81.3	32.9	4.0
Burning Debris	100	19.6	130.5	52.8	6.3
Burning Right-of-Way	2	0.4	0.2	0.1	0.0
Locomotive Spark	12	2.3	240.6	97.3	11.7
Other Engine Spark	4	0.8	0.8	0.3	0.1
Miscellaneous	29	5.7	85.3	34.5	4.1
Unknown	62	12.2	319.5	129.3	15.5
Lighting	0	0.0	0.0	0.0	0.0
TOTALS	510	100.0	2,058.7	833.0	100.0

TABLE 17
CLASSIFICATION OF FIRES BY MONTH OF OCCURRENCE, 1986

Month	No. of Fires	Area Acres	Area Ha	Percentage of Total Fires	Percentage of Total Area
January	0	0.0	0.0	0.0	0.0
February	0	0.0	0.0	0.0	0.0
March	29	101.8	41.2	5.7	4.9
April	225	901.0	364.6	44.1	43.8
May	182	932.4	377.3	35.7	45.3
June	22	21.9	8.9	4.3	1.0
July	33	52.4	21.2	6.4	2.5
August	6	1.7	0.7	1.2	0.1
September	8	7.5	3.0	1.6	0.4
October	3	0.3	0.1	0.6	0.0
November	1	16.1	6.5	0.2	0.8
December	1	23.7	9.6	0.2	1.2
TOTALS	510	2,058.8	833.1	100.0	100.0

TABLE 18
HUNTING AND NON-HUNTING ACCIDENTS AND RELATED STATISTICS

County	Injury Hunting Accident	Non-Hunting Accident	Total by Fatal	County
Annapolis	—	—	—	—
Antigonish	—	—	—	—
Cape Breton	2	—	—	2
Cumberland	1	—	1	2
Colchester	—	—	1	1
Digby	—	—	—	—
Guysborough	—	—	—	—
Halifax	3	—	—	3
Hants	2	—	—	2
Inverness	—	—	—	—
Kings	—	—	—	—
Lunenburg	2	—	—	2
Pictou	—	—	—	—
Queens	1	—	—	1
Richmond	—	—	—	—
Shelburne	2	—	—	2
Victoria	—	—	—	—
Yarmouth	—	—	1	1
TOTAL	13	—	3	16

Game Being Hunted

Moose	—	Furbearers	—		
Deer	4	Bear	—		
Rabbits	7	Unknown	1		
Birds	4	Non-Hunting	—		

Type of Weapon Involved

Shotgun	7	Muzzle loader	—
Rifle	4	Bow	—
22 Cal.	5		

Causes of Accidents

Shooter stumbled and fell	4	Victim out of sight of shooter	3
Victim mistaken for game	1	Victim moved in line of fire	1
Trigger caught on object	1	Weapon fell from insecure place	—
Unintentional discharge	1	Victim covered by shooter swinging on game	1
Horseplay with firearm	1		
Clubbing cover or game	—		

Intentional discharge	—	Crossing fence or obstacle with loaded weapon	1
Unloading weapon	1	Removing weapon or placing in vehicle	—
Defective weapon	—	Riding in vehicle with loaded firearm	—
Loading weapon	—		
Others	1		

Colour of Clothing Worn by Victim

White	—	Blue	2	Yellow	—
Red	1	Dark	—	Orange (fatal)	2
Green	—	Other	5	Orange (injury)	6

Time of Day Accident Occurred

6:30 – 8:00 a.m.	2	12:00 – 4:00 p.m.	5
8:00 – 10:00 a.m.	—	4:00 – 5:00 p.m.	4
10:00 – 12 Noon	2	5:00 p.m. – Dusk	3

Cover Type		**Visibility**	
Dense	3	Clear	9
Light	5	Poor	1
Open	7	Overcast	3
Unknown	1	Dark	1
		Unknown	2

Vision		**Self-Inflicted Accident**	
Wears glasses	1	Fatal	—
Colour blind	—	Injury	6
Unknown	—	TOTAL	6

Age Class of Accidents

	Shooter	Victim
Unknown	1	—
10 – 15	2	3
16 – 20	6	1
21 – 25	3	1
26 – 30	2	2
31 – 35	1	1
36 – 40	—	1
41 – 45	—	—
46 – 50	1	1
51 –	—	—

Charges Laid as Result of Accidents

Lands & Forests Act	1
Criminal Code	1
Number liquor involved	—

Muzzle to Wound Distance (yards)

0 – 10	10
11 – 50	1
51 – 100	4
Over 100	—
Unknown	1

Hunting Experience of Shooter

1 Year	3	4 Years	1	Over 5	2
2 Years	3	5 Years	1	Over 10	4
3 Years	1	Unknown	1		

Hunter Safety Courses

First time firearm hunters	6,275
Other firearm hunters	2,268
Bowhunters	505
TOTAL	9,048

Failures:	Firearm	638
	Bowhunter	—
	TOTAL	638

Course Graduates Involved in Accidents

Firearm course	8
Bowhunter course	—
TOTAL	8

Number of Hunters and Fishermen, 1985**

Big game	104,121*	Est. rabbit hunters	24,394
Small game	30,388	Bear trapping	834
Moose	—	Furbearers	4,349
Fishing	84,262	Senior citizen, fishing	5,000
Senior citizen, big and small game	10,563	TOTAL	263,911

Prosecutions, 1985**

Total prosecutions	657
Jacking, uncased gun and shining light prosecutions	78
Warnings	764

Game Taken, 1985**

Deer	66,390	Grouse	132,421
Bear	595	Pheasant	12,668
Moose	—	Hungarian partridge	1,340
Woodcock	6,736	Rabbits	449,426
Snipe	4,286	Furbearers	63,908
Black ducks	46,089	Trout	1,126,227
Sea ducks	48,840	Salmon	16,897
Other ducks	35,449	Geese	5,761

**Licenses, Prosecutions and Game Taken are for previous year as present year's statistics are not available.
*Includes 16,999 Second Permits.

OTHER STATISTICS RELATED TO GAME: SEASONS & LICENSE FEES, 1986

Deer: October 31 – December 6. Special bow season December 8–13—all counties.
Bag limit: 1 of either sex province wide (two east of Hwy. 101).
License fees: Resident $15.00, Non-resident $75.00, Senior citizen—free.
Second permit same as license. Bow season additional fee—Resident $5.00, Non-resident $10.00.

Bear: Trapping—September 15 – December 15 (residents only—License free)
Hunting—October 31 – December 6
License fees: Resident $15.00, Non-resident $75.00

Rabbits: November 16 – February 15 (use of 22 from December 15th only)
Bag limit—none
No license required for residents. Small game license for non-resident $35.00.

Moose: September 30 – October 4
Victoria and Inverness Counties only.
Limit 200 licenses—fee $35.00.

Pheasant, Hungarian Partridge and Grouse:
Pheasant and Hungarian Partridge in Annapolis, Kings, Hants and Lunenburg—November 1 to December 15.
Remainder of province October 1 to December 15.
Grouse—October 1 to December 15.
Bag limits—pheasants—2 cocks per day after first day no more than 4 cock birds. Hungarian partridge and Grouse—5 per day no more than 10 after first day.
License fees—Resident $10.00, Non-resident $35.00, Resident Senior Citizen—Free.

Furbearers: Mink, muskrat, otter, beaver—November 1 to January 15, 1987. Fox, bobcat, weasel, red squirrel, skunk, fisher, raccoons—November 1 to last day of February 1987. Residents only.
License fee $10.00.
No snaring until December 15. See Trappers Summary for bag limits.

Fish and Migratory Birds

Regulations and bag limits controlled by federal government.
Provincial salmon license—Resident $15.00, Non-resident $25.00.
Fishing license—Resident $8.00, Non-resident $30.00.
Federal migratory bird license $7.00 (includes Conservation Stamp).
Provincial small game license also required.

TABLE 19
AREAS OF SPRUCE BUDWORM DEFOLIATION BY REGION SINCE 1982
('000 hectares)

Region of Province	Year	Light	Moderate[2]	Severe[1]	Total
Cumberland and Colchester	1982	13.6	92.0	48.9	154.5
	1983	6.4	18.9	158.6	183.9
	1984	15.9	23.5	13.7	53.1
	1985	25.6	25.5	154.2[1]	205.3
	1986	109.7	231.7[2]	3.8	345.2
Pictou, Antigonish and Guysborough	1982	11.0	28.7	0.8	40.5
	1983	21.8	16.5	38.2	76.5
	1984	4.2	9.3	12.2	25.7
	1985	0.7	6.5	132.6[1]	139.8
	1986	33.0	51.0[2]	2.1	86.1
Annapolis Valley and Hants County	1982	0.0	4.1	0.0	4.1
	1983	34.7	14.4	29.9	79.0
	1984	6.3	0.0	0.0	6.3
	1985	0.0	0.0	0.0	0.0
	1986	0.0	0.0	0.0	0.0
Cape Breton Island	1982	12.3	0.4	0.0	12.7
	1983	0.5	2.2	15.5	18.2
	1984	0.0	0.0	0.0	0.0
	1985	0.0	0.0	0.0	0.0
	1986	0.0	0.0	0.0	0.0

[1]1985 severe with some moderate patches.
[2]1986 moderate with severe patches.

Total area of all categories of defoliation	1982	1983	1984	1985	1986
	211.8	357.6	85.1	345.1	431.3

TABLE 20
DUTCH ELM DISEASE
SANITATION ASSISTANCE PROGRAM, 1986–87

Municipality	Number of Trees Removed or Sanitized	Cost	Provincial Grant
Truro	14	3,045	1,500
Kentville	32	8,325	1,000
Amherst	44	2,020	1,000
Stewiacke	3	2,132	1,000
Berwick	5	2,015	1,000
Pictou	25	5,000	1,000
Oxford	26	5,014	1,500
Wolfville	5	3,090	1,000
Westville	12	2,450	1,000
Bible Hill	13	1,352	500
Bridgetown	20	4,270	1,500
Annapolis Royal	7	2,220	1,000
Kings County	578	15,114	1,000
Digby	5	2,140	1,070
Windsor	42	14,520	1,500
New Glasgow	74	15,340	1,500
Hants County (West)	238	9,105	428
Stellarton	30	12,000	1,000
Pictou County	256	2,301	1,150
Middleton	17	6,645	1,500
Lawrencetown	12	5,000	1,000
Halifax	27	4,810	1,000
Antigonish	46	9,205	2,000
TOTALS	1,531	137,113	26,148

TABLE 21
PROVINCIAL CROWN LAND FOREST PRODUCTION
STUMPAGE AGREEMENT WITH LUMBER COMPANIES, 1986

Firm	Annual Allowable Cut bd. ft. (m^3)	Softwood Sawlogs bd. ft. (m^3)	Hardwood Sawlogs bd. ft. (m^3)	Softwood Pulpwood cords (m^3)	Hardwood Pulpood cords (m^3)	Hardwood Fuelwood cords (m^3)	Studwood cords (m^3)
E.M. Comeau & Sons (1977) Ltd., Meteghan	1,027,308 (5 804)	421,690 (2 383)		163 (590)		74 (272)	
Long Lake Lumber Ltd., Shelburne	2,400,000 (13 560)	*					
Harry Freeman & Sons Ltd., Greenfield, Queens County	400,000 (2 260)	383,980 (2 169)	8,670 (49)	277 (1 006)	277 (1 006)		216 (785)
Lewis Lumber Co. Ltd., Weymouth	400,000 (2 260)	496,700 (2 306)					
Caledonia Woodworkers Ltd., Caledonia, Queens County	800,000 (4 520)	527,074 (2 978)		456 (1 652)	1 (4)		
Ledwidge Lumber Co. Enfield	1,000,000 (5 650)	1,113,680 (6 292)		1,858 (6 737)	30 (108)	888 (3 220)	2,148 (7 787)
Taylor Lumber Co. Middle Musquodoboit	1,000,000 (5 650)	135,920 (768)		583 (2 113)		188 (681)	
Elmsdale Lumber Co. Elmsdale	1,202,892 (6 796)						
Barrett Lumber Co. Sackville	**						

G. Royce Hefler Ltd.	1,200,000 (6 780)					
Hoeg Brothers Lumber Ltd. Athol	450,300 (2 544)	85,970 (486)	360 (1 308)	41 (149)	49 (149)	370 (1 341)
Kingston Lumber & Building Supplies Kingston	300,000 (1 695)	782,570 (4 421)	94 (342)	12 (44)		
Sproule Lumber Ltd. Truro	5,750,000 (32 4867)	937,070 (5 294)	1,281 (4 644)	236 (856)	440 (1 596)	66 (239)

*The mill burned.
**This agreement allows the company to harvest products from August, 1979 until such time as they have received 742,842 board feet (4 196 m³).
***Because of the volume cut in 1986, there will be no cutting under this agreement in 1987.

TABLE 22
OFFENCES AND CONVICTIONS
BY STATUTE AND COUNTY, 1986

A—Offences known or reported B—Number of persons charged C—Warnings issued

District		L&F Act Part I	L&F Act Part II	L&F Act Part III	Parks Act	Beaches P&P Act	Snow Vehicles Act	MBC Act	Totals
Annapolis	A	–	1	119	–	–	–	–	120
	B	–	1	12	–	–	–	–	13
	C	–	–	5	–	–	–	–	5
Antigonish	A	8	–	80	1	4	–	6	99
	B	–	–	15	–	–	–	–	15
	C	–	–	6	–	2	–	–	8
C.B./Sydney	A	14	26	799	15	8	–	48	910
	B	–	7	39	6	–	–	9	61
	C	1	–	55	6	–	–	1	63
Colchester	A	–	1	150	–	1	–	–	152
	B	–	1	34	–	–	–	–	35
	C	–	–	27	–	–	–	–	27
Cumberland East	A	–	–	100	–	–	–	–	100
	B	–	–	11	–	–	–	–	11
	C	–	–	11	–	–	–	–	11
Cumberland West	A	–	–	60	18	2	–	–	80
	B	–	–	16	–	–	–	–	16
	C	–	–	6	–	–	–	–	6
Digby	A	–	6	170	3	1	–	4	184
	B	–	–	26	–	–	–	–	26
	C	–	–	17	–	–	–	–	17
Guysborough	A	5	–	47	1	6	–	6	65
	B	5	–	8	–	–	–	–	13
	C	2	1	30	–	–	–	–	33
Halifax East	A	4	12	195	14	3	–	31	259
	B	–	4	46	3	–	–	6	59
	C	–	4	33	2	1	–	–	40
Halifax West	A	3	27	256	46	22	–	5	359
	B	–	1	99	2	–	–	–	102
	C	–	15	64	12	–	–	–	91
Hants	A	–	6	214	–	–	–	–	220
	B	–	–	58	–	–	–	–	58
	C	–	6	51	–	–	–	–	57
Inverness	A	–	8	197	5	1	–	–	209
	B	–	–	33	–	–	–	–	33
	C	–	5	76	–	–	–	–	81
Kings	A	1	15	343	1	3	–	3	366
	B	–	4	31	–	–	–	–	35
	C	–	2	75	–	–	–	–	77
Lunenburg	A	8	32	382	12	14	–	26	452
	B	–	–	66	7	–	–	1	74
	C	1	4	74	2	–	–	–	81
Pictou	A	–	4	119	4	–	–	–	127
	B	–	15	16	27	–	–	–	58
	C	–	–	7	–	–	–	–	7
Queens	A	1	8	98	3	1	–	15	126
	B	–	2	33	–	–	–	4	39
	C	–	4	19	3	–	–	4	30

Richmond	A	15	11	117	12	7	–	8	170
	B	1	–	27	–	–	–	4	32
	C	–	4	42	2	–	–	–	48
Shelburne	A	5	–	92	2	4	–	11	114
	B	1	–	26	–	–	–	12	39
	C	1	–	39	–	–	–	–	40
St. Mary's	A	–	–	46	–	2	–	5	53
	B	–	–	17	–	–	–	–	17
	C	–	–	25	–	–	–	–	25
Victoria	A	13	16	333	–	6	7	11	386
	B	–	1	39	–	–	–	–	40
	C	4	11	166	–	2	3	1	187
Yarmouth	A	3	29	104	6	3	–	6	151
	B	–	–	21	–	–	–	–	21
	C	1	3	16	2	2	–	–	24
Total	A	78	200	4,001	143	88	7	185	4,702
	B	7	36	673	45	–	–	36	797
	C	10	59	844	29	7	3	6	958

Jacking	50
Shining Movable Light	16
Uncased Rifle	55